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AUTHOR Ranaweera, A. Mahinda
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ABSTRACT

This paper synthesizes the findings and conclusions of reports from previous studies carried out by Unesco's Institute for Education concerning issues of integration, balance, and relevance in the content of general education. This synthesis identifies and develops guidelines based on the previous studies and is designed for use by curriculum development specialists, teachers, teacher educators, and others. It is expected that these guidelines can be used as a basis for training national curriculum development specialists and for pre-service and in-service teacher education programs. An overview of current thinking practices concerning integration, balance, and relevance in general education from an international perspective is followed by a synthesis of the national level case studies. Guidelines for curriculum developers and teachers also are outlined along with suggestions for national level action and regional and international cooperation. (KM)

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UIE REPORTS

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Relevance, Balance and Integration of the Content of General Education: Achievements, Trends and Issues

A Synthesis

A. Mahinda Ranaweera

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Feldbrunnenstrasse 58
D-2000 Hamburg 13
Federal Republic of Germany

Tel. ++ 49 40 44 78 43
Fax ++ 49 40 410 7723

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1. INTRODUCTION

1.1 Rationale

Curriculum reform programmes carried out by many countries around the world during the last thirty years or so have been intended to adjust the content of the general education curriculum to suit the changing social, economic and cultural context and to meet the demands brought about by global development. These include decolonization, advances in science and technology, the energy crisis, environmental problems, population issues, poverty and unemployment, international understanding, peace and disarmament, the value crisis, the impact of mass media and the knowledge explosion. In response, the aims and objectives of general education have been broadened, and its scope expanded. The approaches to curriculum development, instructional methodologies, evaluation and teacher education that were designed and condidered appropriate for a world that was relatively stable are no longer valid. Hence education should be re-oriented towards future developments, giving due regard to issues such as knowledge versus learning and problem-solving skills, a national versus a global outlook, and the maintenance of values and cultural identity amidst the impact of socio-economic and technological changes. Furthermore, the recent vast expansion of subject disciplines and of the content of the curriculum, and the increasing complexity of the teaching-learning process raise numerous problems which need careful consideration in implementing curriculum reform programmes. The most significant aspect of the reform process is the improvement of the integration, balance and relevance of the content of general education.

1.2 Background

Unesco's second Medium-Term Plan (1984-1989) approaches the issues of integration, balance and relevance from two main directions: policies and goals for the

development and democratization of education; and the content and process of education. Unesco's programme for 1984-85 included a sub-programme (4.2.2) concerned with 'improvement of the content of education', in which a paragraph is devoted to the promotion of interdisciplinarity, coherence and balance in the content of general education (Unesco 1984: § 04227).

The concepts of integration, balance and relevance were investigated in sequence during the three phases of the Medium-Term Plan. In 1984-1985 the emphasis was on integration. National case studies conducted during that biennium paid special attention to ways of integrating major interdisciplinary fields - such as education for peace and respect for human rights and the rights of peoples, education designed to promote equality, environmental education, media education, the interaction between education and productive work, ethical values, aesthetic education, cultivation of artistic awareness and promotion of cultural identity, and science and technology teaching. The concept of lifelong education was also taken up as a means of interdisciplinary integration and of linking the educational process to aspects of the environment, while the studies recognized the importance of interweaving physical and sports activities, intellectual activities and practical activities. Some of the studies were used in Unesco expert meetings, workshops, seminars and symposia both at Headquarters and in the Regional Offices. The 1986-1987 Programme and Budget of Unesco (23 C/5 § 04214a) provided for a study on the distribution and balance of the content of general education in a number of Member States with a view to improving the balance to be achieved in curricula between the various types of educational content. The third exercise of the Medium-Term Plan (1988-1989) emphasized issues dealing with the relevance of the content of general education and envisaged, as the fourth and final exercise, the preparation of a synthesis of the studies carried out during the earlier phases.

More specifically, the study had the following aims:

I. Preparation of a global analysis of issues and trends relating to the concepts of integration, balance and relevance of content of general education based on an examination of the literature on these concepts and on a review of experiences which promote them.

II. Preparation of a synthesis of Unesco activities conducted during the last ten years which have considered the concepts of integration, balance and

relevance of the content of general education, based on the reports and publications of these activities. This is an opportunity to bring together experiences and conclusions of the activities organized by different Units, Divisions, Regional Offices and Sectors.

III. Collection, through several representative national case studies, of information on the distribution and balance of the different aspects and types of content in general education programmes around the world.

IV. Preparation of an overall synthesis of the materials produced under the previous phases of the study.

The present paper is expected to fulfil Aim IV mentioned above and is a synthesis of the material made available in the following documents prepared during the earlier phases:

1. *Synthesis of Outcomes of Unesco Activities Dealing with Integration, Balance and Relevance of the Content of General Education*, prepared by the Unesco Institute for Education, Hamburg
2. *An Analysis of Issues and Trends Relating to the Concepts of Integration, Balance and Relevance of the Content of General Education*, by G. Eyford
3. *Interdisciplinarity in General Education*, by Louis d'Hainaut
4. *Developing a Common Core of Knowledge, Skills and Values: Lessons from a Global Review*, by D.I. Allen
5. Representative national case studies on the distribution and balance of the content of general education from
   (i) Canada (British Columbia)
   (ii) Japan
   (iii) Jordan
   (iv) India
   (v) The Netherlands
   (vi) The Ukrainian Soviet Socialist Republic
6. *The Contents of Education*, by S. Rassekh and G. Vaideanu

1.3 Purpose of Synthesis

An attempt is made in this paper (a) to synthesize the findings and conclusions of the reports of the studies mentioned above, and (b) to identify and develop some guidelines, based on those indicated in these studies, for curriculum development specialists, teachers, teacher educators and others. It is expected that these guidelines would be recommended to those concerned as a basis for the training of national curriculum development specialists and in initial and in-service teacher education programmes.

1.4 Explanation of Some Key Terms

The following explanations of some key terms used in the synthesis indicate the scope and limitations of the use of those terms in the context of the present synthesis.

General Education: The common core of basic knowledge, behaviours and skills which *all* learners are expected to acquire during the early stages of their education and which, in its choice of learning experiences, does not envisage any kind of specialization with a view to preparing them for work in a particular sector is considered as general education. The duration of general education varies according to the educational system of a given country; in some it may be limited to the primary level and in others it may extend to the lower secondary or even upper secondary level. The role and functions of general education are changing in view of the need to prepare learners to cope with developments taking place continuously at the global and local levels. In the past it was confined to the three R's, but there has been a gradual expansion in which its scope has increased to include areas such as science and technology, social sciences, aesthetics, physical education and pre-vocational education. Recent global developments have made it necessary to expand it further to include certain elements of new interdisciplinary themes such as population education, issues about the environment, peace and disarmament, international understanding, etc.

The role of general education is seen as having several aspects pertaining to the life of the learner:

- as preparation for community, social and cultural life and for interdependence and international understanding
- as contributing to a better quality of life through intellectual, physical, emotional and aesthetic development
- as preparation for working life, for creation and production
- as preparation for mobility and change (enhancement of educability)
- as preparation for participation in the development of the community, the nation and mankind

Educational Contents: The definition given by Rassekh and Vaideanu (1987: 123) can be used for the purpose of this synthesis:

> Educational contents constitute a body of knowledge, know-how, values and attitudes, taking the concrete form of syllabuses (timetables and curricula) and devised in accordance with goals and objectives assigned to the school by each society; those contents, organized by level or type of education institution and by class and discipline, are worked out with an educational goal in mind and are the object of a specific process - learning. By 'contents', then, we mean explicit contents, expressed in the form of teachers' guides, curricula or school textbooks.

Curriculum Integration: In the present study, "integration implies the organization into a meaningful whole of different areas of knowledge and of different approaches, and the development of a common language so as to enable conceptual and methodological exchanges to take place" (Unesco 1986: 2). Conventionally, the term 'curriculum integration' has been used to denote combining two or more subjects to form a meaningful learning area that would help effective integration of learning experiences in the learner. In a broader sense, curriculum integration refers to the organization of learning experiences in which the work involves competencies related to more than one discipline or subject area. Integration may also be portrayed in the co-operation of various individuals and interest groups in the planning and implementation of the curriculum; but that aspect will not be considered in this synthesis.

Balance: Balance refers to the "extent to which there is an appropriate distribution of attention to the various elements within the content and in the instructional and

learning systems and within the framework of both formal and nonformal education ... Thus balance refers to the organization of specific content and learning systems within the overall curriculum programme from a quantitative and qualitative point of view, balance between different types of content, or in relation to training objectives (general culture and work experience) or to the kind of activities involved (mental, physical, etc.)" (Unesco 1986: 3).

Relevance: Relevance, in the context of education, refers to the extent to which it meets the needs, interests and intellectual and physical abilities of the learners, on the one hand, and to the degree of adjustment of its relationship with the values and objectives of a given society on the other. More specifically, relevance of education to any given situation may be considered in the following six categories:

i) Personal relevance to learner - age, ability, needs, interests, aspirations, etc.
ii) Parental occupation, mother tongue, traditional practices and values, etc.
iii) Rural, urban or other specific setting
iv) Temporal relevance - preparatory education, occupational skills, learning skills and motivation needed in future at different stages of life
v) National relevance - political, economic, social, cultural, moral/religious context
vi) Global or universal relevance - human values, peace, global issues, etc.

The discussion in this paper applies the above categories to general education.

Interdisciplinarity: The term interdisciplinarity is not one which has a unique and universally accepted definition. It has been interpreted in different ways in different contexts. It is therefore essential to adopt a definition which has general acceptance and which is functional in the context of this paper, viz., the content and process of general education. A definition that may be considered is the following, which appears in the report of the Director-General of Unesco to the Executive Board on the preparation of the Medium-Term Plan for 1984-1989 (113 Ex/4, para 426):

> In epistemological terms, the concept of interdisciplinarity may be regarded as a form of co-operation between various disciplines which contribute to the achievement of a common end and which, through their association, further the emergence and advancement of new knowledge.

For the purpose of this paper, one has to look beyond an epistemological definition of interdisciplinarity and accept a more functional definition of *interdisciplinarity in education*. The following characterization is helpful for this purpose (d'Hainaut 1986: 15):

> It is essential to make a clear distinction between:
> - interdisciplinarity in general, which is a way of conceiving, organizing and making use of knowledge;
> - interdisciplinary education, which is a means of communicating knowledge, know-how and life skills in accordance with a strategy which is not confined to progression within a single discipline or several disciplines considered independently of one another;
> - interdisciplinary education aims to establish an integrated curriculum, that is to say, to organize the educational process in such a way that the learner is placed in meaningful situations and engages in activities which require abilities relating to more than one subject area, so as to achieve an effective integration of this learning experience.

The various levels and degrees of interdisciplinarity in education will be dealt with later.

Core curriculum (common core): The term core curriculum refers to a set of *basic* and *essential* learning experiences (knowledge, skills and attitudes) which *all* pupils are expected to acquire, irrespective of whether they are living in an urban or a rural environment, whether their education course is terminal or leading to a higher level, whether they are learning in a formal or nonformal system and whether the aims and objectives of the curriculum are narrowly focused on the most essentials (e.g., 3Rs) or more broadly conceived.

2. OVERVIEW OF CURRENT THINKING AND PRACTICES CONCERNING INTEGRATION, BALANCE AND RELEVANCE IN GENERAL EDUCATION IN AN INTERNATIONAL PERSPECTIVE

The curriculum reform activities carried out at national, regional and international levels during the last two decades have been directed towards reorienting education to the changing social, economic and cultural context. An important milestone in these activities was the International Symposium on the Evolution of the Content of General Education Over the Next Two Decades held in Unesco, Paris, in July 1980.

The symposium considered the major trends that were likely to take place in the evolution of the content of education during the next two decades in view of the knowledge explosion and the rapidity of technological advances. It was observed that as a consequence of these two factors, the general education curriculum was rapidly becoming obsolete, and attempts to update and upgrade it resulted in overloading it to such an extent as to sacrifice innovation, creativity, leisure, sports and, in general, training in how to achieve happiness and develop a well-balanced personality. Such concerns led to the realization of the need to consider issues such as interdisciplinarity, integration, balance and relevance of the general education curriculum. As opposed to the conventional approach based on the juxtaposition of disciplines, it was recognized that the content should be more effectively integrated with centres of interest and with investigations using an interdisciplinary approach. Special attention was also paid to the role of the school in linking the world of the school with the world of work and to educational action that would bridge the gap between manual work and intellectual work. One important principle that emerged from the deliberations was that the development and production of knowledge seemed likely to lead increasingly to the integration and simplification of learning. Working out the content of general education, therefore, was considered to be primarily a matter of organizing, pruning down and building bridges and linkages between different content areas with a view to such integration and simplification.

2.1. **Relevance**

> Relevance is, in particular, not an absolute property; nothing is either relevant or irrelevant in and of itself. Relevant to what, how, and why? - that is the question. (Scheffler 1978: 75).

If education is considered as one of the main factors contributing to the development of the individual and the nation, and to the improvement of the quality of life, then it necessarily follows that it should be relevant to the historical, social and cultural traditions of the country, national development goals, socio-economic conditions, environment, natural endowments and the aims and aspirations pertaining to the quality of life of the community. In this context, relevance may be considered from three angles in relation to the quality of education: the need to root it in national values and to achieve cultural identity; the strengthening of links between education and development, and integration with the world of work; and the new environment that is being created by the scientific and technological revolution now affecting the lives of people.

In the field of education and content of education, there is a strongly held opinion that relevance should only be considered from the point of view of the learner (Lemke 1981: 50). It is asserted that there is no single body of material, no single group of problems, no set of needs which is relevant to all learners. A variety of curricula is therefore needed.

A distinction has been made between relevance and efficiency:

> Most of the efforts to improve the curriculum have tried to make it more *efficient*, but not more *relevant*. So how then can relevancy be accomplished? And where do you start? The answer to the first question is that any curriculum which starts with the student and his needs has a *very good chance* of being relevant. Any curriculum which is structured around subjects and the accumulation of information has *little chance* of being relevant to the learner. Relevancy is a matter of purpose. It may be that, as in the case of the faculty theory of psychology presented earlier, those planning the curriculum are not concerned with relevancy. They may only be concerned with efficiency. In that case, a thorough re-examination of directions, goals, purposes, accomplishments and aspirations is in order ... To fundamentally change the educational system one must make it *relevant first*, and then *efficient*. (Lemke 1981: 50-51)

Referring to various quantitative and qualitative criteria and indicators that have been suggested for evaluating content, Rassekh and Vaideanu (1987: 201) make the following observation:

> These different sets of criteria or indicators may prove satisfactory in certain situations, but the multidisciplinary and indissociable nature of the sources of contents and the goals of education calls for a comprehensive approach and a synthesis between internal requirements (of a specifically educational character) and external requirements. The relevance of contents as a set of values, knowledge and know-how is a basic initial problem confronting curriculum designers, teachers and evaluators alike. They must perceive the very close connections between the various characteristics of the contents, which cannot be balanced unless they are coherent, responsive unless they are flexible, and so on.

It is sometimes asserted that the degree of relevance of the content of formal school learning is weaker than that in the nonformal sector. The need arises therefore to examine the issue of relevance in relation to the purposes of schooling. The social relevance of school learning is emphasized in the following:

> Seen in long-term perspective, then, the school is a means for the improvement of society. The ultimate fruit of the knowledge it seeks is its use in life. Schooling must thus be so organized as to bring knowledge to bear on life's problems and, in so doing, to train students in the proper application of what they may know or come to know. Practical problems of the larger community should serve to provide the major framework within which all the school's activities are set. Separate as abstract intellectual specialties, the school's subjects are to be brought together in their common application to shared social problems. Curricular integration is to be accomplished not by some internal structural scheme, but by a pervasive view of the content of schooling as an instrument in the service of the larger society. Education is thus to be made relevant by making its instrumental values dominant. A remote education, bringing nothing to the resolution of the problems of society, is a luxury society neither can nor should allow.
> (Scheffler 1978: 81)

The danger inherent in attempting to make education relevant by conceiving schooling as an instrument for the implementation of designated social values, taken as ultimate, has also to be recognized. It may, if applied uncritically, be a source of

danger to the ideal of a free and rational society. It has therefore been asserted that the primary task of education is "not to be relevant, but to help form a society in which its ideal of free inquiry and rationality shall themselves have become chief touchstones of relevance" (Scheffler 1978: 84).

2.2. **Balance and Distribution**

2.2.1. *Balance*

One of the major problems in curriculum design related to the organization of content in general education has always been that of achieving a balance between the various components (or disciplines) that stake a claim for inclusion in the curriculum in order that all the desired objectives are adequately covered. In the past, there had always been a body of knowledge or disciplines traditionally regarded as indispensable for the education of the child. This invariably included the 3Rs, but in addition to the cognitive subject content, moral, aesthetic and physical education were also provided.

The need to consider the issue of balance from a wider perspective encompassing the various components of the educational process has been recognized:

> The traditional problem of the balance between disciplines, which has generally been regarded as a matter of selecting subjects, stratified in accordance with the goals of the social hierarchy, and of allocating timetable hours between these subjects, must now be reformulated. The solution to the problem of balance should, perhaps, be sought not in relation to disciplines or in terms of a balance to be established between objectives expressed as knowledge to be acquired, attitudes, values or skills; instead, it should perhaps be seen in terms of the converging influence of the various components of the educational process on the development of the personality through cognitive, affective, ethical, aesthetic and sometimes even physical effects. (Unesco 1975b: 5)

Eyford widens the scope of balance to include "balance between the needs of society and the needs of the individuals, balance between national and global needs, balance between material instincts and spiritual instincts, a balance recognizing our different modes of knowing (cognitive, affective, psycho-motor); recognizing Jung's four faculties - reason, senses, emotions, intuition; recognizing ... the mental, the

physical, the emotional, the spiritual" (Eyford 1986: 3).

The problem of maintaining a balance between the development of the individual and his education as a member of society has also to be considered. In this context, one has to be careful not to take the extreme paths of sacrificing the individual - and education - to the utilitarian requirements of economic development of the community on the one hand, or of riding roughshod over the community in favour of selfish aspiration, on the other. The aim should be to develop the potentialities and critical awareness of the individual in such a way as to enable him to achieve self-realization within and for the benefit of society. In an analysis of the role of learning and education in shaping a better world, five elements through which all learning is mediated are identified: language, tools, values, human relations and images (Botkins et al. 1979: 37). It is pointed out that:

> the bulk of learning in the world today is of the 'maintenance' variety, depending heavily on the transmission of knowledge through language which deals in concepts, abstracts, conventional wisdom; and tools, that is, skills, techniques, trades, professions.

It is therefore argued that though traditional knowledge and custom are well served by *language* and *tools*, something which is more 'anticipatory' must be added to these strategies which will permit us to deal with the unexpected, to plan for the future and to help us 'learn how to learn'. To this end we must make use of *values*, *human relations* and *images*. (Eyford 1986: 11)

Another aspect to be considered is a proper balance between content of an academic nature and experiences related to the world of work. This calls for the inclusion of work-oriented experiences in the school curriculum, geared preferably to productive work. Similarly, the need to give "profound thought to ways likely to create the best possible balance between general education and practical and vocational training, so that education becomes not only an economic development factor, but also a guarantee for cultural identity" has been advocated (Unesco 1984b: 1). The same applies to education in science and technology, where a proper balance has to be maintained between the product (content), process (methods and attitudes) and applications to everyday life and the needs of society. In this sense, balance also refers to the organization of specific content and learning systems within the overall curriculum programme from a quantitative (what workload does one specific element

represent in ratio to the whole) and a qualitative point of view, to different types of content, to training objectives (general culture and work experience), or to the kinds of activity involved (mental, physical, aesthetic, etc.). The issues related to balance have been summed up as follows:

> It appears therefore that educational content calls for something more complex than a quantitative balance of subjects or the achievement of a list of behavioural objectives, but should be sought in terms of educational functions. From that point of view, it is easier to speak of correcting imbalances, such as are now to be found in existing educational curricula, than of achieving balance. It is clear for instance that in a more and more technological world the strengthening of the technological and scientific component of education, particularly in the developing countries, is required to correct existing inadequacies observable in most systems. More generally speaking, education should be more closely linked to culture and have a stronger component of aesthetic education and of moral education. Aesthetic and moral education should convey to the child both the national values which will firmly root him or her in his or her own culture and the international values which are needed as a basis for the solidarity of mankind. Education should aim at developing the complete man and not only life-long integrated, but life integrating, thus reacting against the disintegration of life and of the individual which is so often brought about in the world of today. (Unesco 1975a: 4)

2.2.2. *Distribution*

Closely linked to balance is also the issue of distribution of content. Distribution should be considered in relation to the phases (primary, secondary, etc.) and components (formal, nonformal) of the educational system. The distribution may, therefore, be seen as a process which calls for vertical integration of its components in successive phases and also for horizontal articulation of the school with nonformal or out-of-school educational activities. A useful criterion to follow is that the educational content of the school should not include what can best be acquired through nonformal activities, in the world of work, or in various settings in the community.

Another aspect concerned with distribution that has received attention in recent times is the distribution of the content between the core and the optional curriculum. This aspect will be dealt with in more detail later.

For determining the relevance and balance of the contents of the curriculum a list of general indicators which do not claim to be exhaustive and definitive, is given by Rassekh and Vaideanu (1987: 201-208):

1. *Receptiveness to scientific and technological progress.* Updating of contents cannot be conceived in terms of extrapolation of the latest scientific findings. What is required is rather: to seek an epistemological harmony between the spirit and methodologies of modern science and contents of education; to include basic concepts in school curricula and to organize knowledge in relation to those concepts; to be receptive to new disciplines or sciences and to their impact on socio-economic development and the spiritual life of the community.
2. *Axiological harmony with culture, art and the aspirations of the people.* With regard to values and the teaching of cultural, artistic and ethical values, harmony should be sought both in the preparation of curricula and textbooks and in the teaching-learning process.
3. *Receptiveness to the problems of the modern world and to the needs of the local or national community.* This twofold receptiveness needs to be constantly borne in mind when updating educational content in relation to present priorities and future requirements.
4. *Aligning contents with the intellectual and physical needs and abilities of learners.* Educational research has demonstrated something of exceptional importance: that all children can learn and that success in school is not reserved for an élite. Moreover, complex scientific, literacy and economic facts are accessible to children at all levels of education.
5. *Balance in the design of curricula and organization of the learning process.* The idea here concerns the internal organization of content both from the quantitative standpoint (size of the workload represented by a particular subject in relation to the whole) and from the qualitative standpoint (convergence of values as between the various types of content, relationship between theories and examples, etc.).

   Content balance seems to be one of the most sought-after characteristics, perhaps in response to the growth in the pressures exerted on contents and perhaps also because of the fact that the many changes made to the curriculum over recent decades have resulted not only in the revision of curricula and textbooks but also in an increase in discontinuities and imbalances which have affected the efficiency of the work of the teacher and, above all, that of the learner. Balance is sought in relation to the ultimate goals of education. Thus it is possible to analyse the balance between: a) The different groups of objectives (cognitive, affective, psycho-motor), in the light

of the needs or interests of pupils and of the principle of the allround development of the personality.

b) The different groups of disciplines, bearing in mind that the temptation to downgrade certain subjects remains strong in all those countries that identify development with economic growth and the natural sciences as the only suitable preparation for active life and a career.

c) Theoretical elements and those that are immediately applicable, or between conceptual aspects and exercises.

d) The distribution of the various types of content between levels, from the primary (or pre-primary) level to higher education.

e) The distribution of disciplines or contents between school and out-of-school education (education relating to the quality of life and the environment, education for peace, etc.), recognizing that certain forms of education are sometimes more appropriately introduced in a non-formal rather than a formal context.

f) National (specific) values and universal values likely to foster communication between peoples and individuals.

g) The various modes of learning - conventional classes, small groups, large groups, etc.

h) The emphasis placed respectively on words and images at the various educational levels.

6. *Coherence of content.* The term 'coherence' has a logical or epistemological ring about it, signifying a close relationship of consonant ideas and hence an absence of contradiction. Coherence can be understood diachronically - in the sense of an absence of contradiction in the development of studies within a particular stage of education or between one stage and another - or synchronically, implying continuous linkage and non-contradiction in the acquisition of knowledge between the various subjects.

7. Contents capable of stimulating effort and sustaining the pleasure of learning. Psycho-educational research has shown that learning calls for great effort ... Carefully conducted research, carried out on the basis of representative samples and over long periods ... has highlighted: the influence of the aesthetic component on the effectiveness of learning; the exceptional educational resources of learning games and of learning by play; the stimulating role of encouragement of the pupil and of the satisfaction produced by even modest success; the key role of the atmosphere in which teaching takes place, of patience and of an optimistic attitude on the part of the educator.

The initial need is to reconcile these two theses: learning involves an effort, but this effort does not exclude play and is all the more effective in so far as it draws

on the learner's manifest or latent potential.

8. *Giving a forward-looking and democratic slant to contents and learning.* The need to orient the curriculum in this direction is dictated by socio-political and educational considerations. The process should find expression in certain characteristics of contents and learning such as may increase equality of opportunity: flexibility of contents, structures and linkages between levels; multiple and combinable options as a way of diversifying learning and satisfying the diversity of pupils' interests and abilities; etc.

2.3 Curriculum Integration and Interdisciplinarity

One of the main purposes of general education is to provide the necessary competencies to learners to make order from chaos, to gain meaning from an environment laden with myriads of messages and overloaded with information, and to acquire a sense of control over his/her own life and a sense of mastery over his/her immediate environment. This task is becoming increasingly difficult as a result of the 'knowledge explosion' and the growing complexity caused by the splitting up of disciplines into narrow fields of specialization and the emergence of new areas of knowledge. In such a situation, it is the responsibility of the educator to provide the learner with a way of managing this store of knowledge and messages, and of selecting and organizing it into meaningful patterns and generalizations. Integration and interdisciplinarity thus become relevant to the general education curriculum.

2.3.1. *Curriculum Integration*

Curriculum integration refers to "a variety of educational practices aimed at counteracting the adverse effects of a fragmented curriculum" (Ingram 1979: 5) and has assumed a variety of shades and forms in different countries in response to their specific problems and expectations from the educational system. Conventionally, the term 'curriculum integration' has been used to denote the combination of two or more subjects to form a meaningful learning area that would help effective integration of learning experiences for the learner.

In the planning meeting for the Joint Innovative Project on Integrating Subject Areas, held in Seoul in November 1980, the term curriculum integration was defined as "the reconstruction of knowledge and experience as a whole to suit the needs and

life-situation of children with a view to enabling them to develop individually and become useful members of society" (APEID 1982: 10). In an attempt to elaborate this definition further, an 'integrated approach' is referred to as "a method of instruction in which children work on a theme or on a topic or an activity or a real-life problem in which the work involves competencies related to more than one discipline or subject area"; and an integrated curriculum is described as "the organization of the content and the teaching-learning process around themes or activities or problems or processes which require interdisciplinary learning" (APEID 1982: 10). The concept of integration, considered from another broader perspective, that of lifelong education, has been described as consisting of two dimensions - vertical and horizontal (Dave 1973). Vertical integration is integration over time and involves the articulation of teaching and learning experiences at different stages of development. Horizontal integration aims to harmonize the various agencies such as home, school and the mass media (formal, nonformal and informal).

Aspects of Curriculum Integration

It has been argued that the curriculum should provide for relevance, flexibility and local specificity. In attempting to develop such a curriculum based on the needs, interests and environment of the children, it is deemed necessary to take into consideration the following aspects of curriculum integration (APEID 1982: 7):

a) Integration of knowledge and the learning process

Living in modern society which is characterized by increasing sophistication of problems that man faces and the explosion of knowledge demands that attention be shifted from the mere acquisition of knowledge to the learning process through which a learner develops methods of inquiry and gets acquainted with matters concerning the process of doing. This creates the need for integrating the learning of concepts, principles and facts with the process of inquiry.

b) Integration of cognition and affect

The affective domain has so far received little or no attention as compared to the cognitive domain in the actual process of teaching and learning. The affective function of education pertains to the emotions, the passions, the motives, the concerns, the empathy, the appreciation, and the moral and aesthetic sensibilities and hence there is a need to integrate the cognitive and affective functions of the curriculum.

c) Integration of knowledge and conduct

Learning about values can be meaningless if it fails to lead the learner to behave in accordance with the values he chooses; hence it becomes necessary that knowledge and conduct be treated as an integrated whole.

d) Integration of school learning with the actual life of the child

Since the final test of the curriculum lies in its utility to improve the quality of life of the learner, any efforts to integrate subject areas should ensure that the learning experiences are meaningful and contributive to improving the child's life in the outside world.

e) Integration of subject areas

The integration of subjects areas may be considered two ways: on the ground that there are common threads that cut across all subject areas, and around the needs and problems of learners and the society.

Forms of curriculum integration

The Joint Innovative Project on Integrating Subject Areas in the Primary Education Curriculum in Asia has found that several forms of curriculum integration are being practised in the Asian Region at the primary stage of education. They can be categorized in three distinct types (APEID 1982: 12):

i) Integration by broad fields of subject areas
ii) Integration by themes and projects
iii) Integration by emerging interests and concerns of children

Integration of Broad Fields of Subject Areas

Integration by broad fields of subject areas consists of the grouping of two or more subject matters that are closely related to each other to form a broad field such as communications, general science, social studies and environmental studies. A good example of curriculum integration through the broad field approach found in several countries is integrated science programmes, in which attempts have been made to integrate not only the traditional physical and biological sciences, but also content areas relevant to life needs such as health, environmental sanitation and nutrition. Another example is social studies programmes, which have attempted to integrate subjects such as history, geography, civics and economics.

Sometimes, science and social studies are further integrated as environmental

studies, particularly at the primary level. It is claimed that these environmental studies curricula have been designed to provide opportunities for self-expression and development of personal creativity, and promote a style of learning which involves inquiry, formulating problems and seeking answers to them.

Integration through creative teaching is another approach that has been attempted in Japan (APEID 1982: 13). In this approach, various instructional activities such as singing, drawing and composition, which are normally used in other subjects such as music, art, handicrafts and languages, are introduced in an integrated manner in the teaching of social studies.

Integration by Themes and Projects

This type of integration is characterized by the use of themes and projects as points around which to organize learning experiences. In this approach, knowledge, skills and experiences from more than two subject areas or broad fields are integrated in a teaching-learning strategy based on major themes and using a "block" timetable. From these major themes, sub-themes are formulated which become units of learning. Such units may also be carried out in the form of projects and activities which cut across the subject areas. An experimental project in Japan serves as a good example of this approach. Several subject areas are integrated into themes for children's activities (APEID 1982: 15):

a) Let us go and pick flowers with friends - integrating Japanese language, science, music, art and handicraft, and physical education;
b) Let us play with snails - integrating science, music, art and handicraft, and physical education;
c) Route to the school - integrating Japanese language, social studies, art and handicraft;
d) Let us play with leaves and nuts - integrating arithmetic, science, music, and art and handicraft;
e) Shadow play - integrating Japanese language, science, art and handicraft, and physical education;
f) Winter life - integrating social studies, science, music, art and handicraft, and physical education;
g) Let us do "mame-maki" - integrating Japanese language, arithmetic and art and craft; and

h) Let us make moving toys using elastic bands, and play with them - integrating Japanese language, science, music, art and handicraft, and physical education.

Integration of subject areas can also be attained in a curriculum based on a series of projects (APEID 1982: 19). In such project-based programmes, learning takes place as a result of exploration, inquiry and direct experience with life and things around the learner. The projects can be built around (i) purposeful and productive activities, (ii) creative, recreative and cultural activities, (iii) activities leading to training in citizenship and social living and (iv) activities leading to clean and healthy living. In the project approach, the discipline content is of secondary importance, although children do learn the facts and concepts in each subject area. The main aim is to get the children to use mental processes and skills which are common to all disciplines and which will be of great use in their future studies. The activities in the projects lead to the development of certain essential mental processes such as observing, using space-time relationships, discriminating, classifying, interpreting, verifying, generalizing through induction and deduction, formulating hypotheses, data gathering and analysis, establishing hypotheses, controlling variables, inferring, predicting, communicating, originating solutions to problems and the like.

Integration by Emerging Interests and Concerns of Children

Integration by emerging interests and concerns of children is based on a study of real-life problems of the learner and society, such as air, water and noise pollution, poor crop yields, afforestation, use of natural resources, diseases and environmental sanitation, etc. Since the study of these problems requires competencies in a variety of subject areas, the problem-centred curriculum lends itself to natural integration of several subject areas and situations.

2.3.2. *Interdisciplinarity*

Interdisciplinarity from an Educational Point of View

The fundamentals of interdisciplinarity are discussed in a report of an international Unesco symposium on interdisciplinarity in general education (d'Hainaut 1986). As stated in this report, in the nineteenth and early twentieth century, as a result of

diversification and increasingly narrow specialization of fields of thought, many disciplines came into being and developed independently of one another. The unifying discoveries made later in this century, together with the breakdown of frontiers imposed by the complexity of areas of knowledge, led scientists and philosophers to consider the essential unity of the various scientific fields and subjects which constituted the epistemological basis of interdisciplinarity. It is increasingly recognized that the problems of the contemporary world do not lie within one discipline, and their solution requires interdisciplinary approaches and collaboration between specialists in different disciplines. Since education is for life, and its current problems are interdisciplinary in character, they must be tackled through interdisciplinary approaches. In a case study prepared for the symposium, Hughes points out that "the argument for interdisciplinarity is not that the disciplines represent a false theory of knowledge, but rather that they are not (and never will be) a complete statement if we take them on their own. It is in the interconnections, the integration, that they attain their most effective use" (Hughes 1985: 10).

The traditional general education curriculum was based on disciplines such as language, mathematics, history, geography and science, and an intradisciplinary approach was adopted in teaching and learning. It was generally accepted that the intradisciplinary approach directly provided both teacher and learner with a structure which respects the hierarchy of prerequisites. Although this approach has certain advantages, particularly the one mentioned above, it has been recognized that these advantages should not be exaggerated:

> First of all, disciplines are not the only possible structure, and adopting the structure of the discipline is probably the easy way out since it obviates undertaking a descending analysis of objectives. Moreover, the structure of the discipline is not necessarily the best one for learning, far from it: it is important not to confuse, as is done so often, the logical reconstruction of a science with a psychological construction of a skill, and while these two are not necessarily in opposition, they are not identical either (d'Hainaut 1981: 204).

For purposes of general education, as distinct from learning a specialized skill, the disadvantages of the intradisciplinary approach are considered to far outweigh its advantages. The alternative pattern of interdisciplinarity that has been suggested to remedy these disadvantages does not completely disregard disciplines:

> Interdisciplinarity sought by groupings of closely related subject-matters or in a more complete form in no way implies that disciplines should be ignored. On the contrary, those disciplines with their own method and epistemology ... should be treated as being both necessary for a systematic training of the mind and for a proper understanding of the world. (Unesco 1975a: 8)

The complexity of the problem of introducing interdisciplinary linkages in the process of the renewal of the general education curriculum was stressed in the preparatory document for Unesco's meeting on curriculum reforms:

> What prominence should be given to interdisciplinarity in the organization of content, or how should teaching by subject be combined with interdisciplinary education? There are many factors which indicate that interdisciplinary has become a necessity; the major problems of the modern world - economic, moral, aesthetic and so on - lend themselves particularly well to interdisciplinary treatment; at the same time, interdisciplinarity appears to be a logical consequence of the integration of all types of content in the context of lifelong education. The probable solution is neither complete interdisciplinarity nor teaching by subjects on traditional lines. A combination of these two systems, arrived at with due regard both to the requirements of modern science and various social activities and to the psychological requirements of different age-groups, would seem to be more realistic and effective. A distinction should be drawn between integration proper, i.e., the amalgamation of several subjects into one in which the scientific concepts are linked by a common purpose and method, and co-ordination, i.e., the carefully elaborated mutual linking of subjects. It is felt that extensive integration is most suitable for primary education, and in many schools in various countries there is thus a primary-school 'general science' course or 'nature study'. At the same time, it should be borne in mind that everyone feels the need for an overall view of the world, but also a classification which could help him in the understanding of phenomena and in the choice of his occupation. (Unesco, 1975b: 17)

The Recent Emphasis on the Need for More Interdisciplinarity

The case for a more interdisciplinary approach in general education is not a recent development, and has been advanced through a variety of arguments, but there has been a recent emphasis on the importance of and need for interdisciplinarity in general education. This arises from the attempts to meet certain felt needs of the current situation and to prepare learners more adequately to shape and choose a

future. The Unesco International Symposium on Interdisciplinarity in General Education summed up the reasons for this recent emphasis. It concluded that the world in which we live is a unity, but that it can be looked at in a variety of ways. The disciplines look at the world from a particular viewpoint, for a particular purpose. The various areas of science, physics, chemistry, geology have their particular forms and their particular ways of working. The arts present their own ways of describing and interpreting the world, as does literature. If we concentrate in our teaching solely on these individual approaches, it is difficult for our students to see the world as a whole, and to develop a broad understanding, necessary in general education. The student has to make sense of the world, to be able to operate successfully as a person, as a citizen, as a productive worker. That sense of understanding can be helped by the capacity to use the disciplines, singly and in co-operation, as appropriate.

What we know from psychology stresses the importance of this sort of approach. The young child's curiosity is not limited to particular subject divisions. We should encourage and build on that curiosity. At a later stage in life, the student's interest spreads to personal and societal issues which again do not fall neatly into particular subjects. It makes sense to use these interests for teaching. This can provide a focus which the student sees as relevant, and which can mean some economy of effort. There is a further important reason to be prepared to look at the curruculum in an interdisciplinary way. Our present disciplines arose during the nineteenth century, from older ways of describing knowledge. Developments in this century cross the old boundaries, in nuclear technology, in space research, computers and molecular biology. We cannot restrict the possibilities to dividing lines which may cease to be relevant.

The current organization of the curriculum arose in the traditions of Europe, with an emphasis on the preparation of an élite. They are less appropriate as a means of preparation for a whole population, where the emphases need to be broader, including both intellectual development and aspects of productive work.

In addition to the familiar areas of study, schools are now being asked to address quite different types of topic: environmental education, education and work, education and world peace. These are essentially interdisciplinary studies and if they are to be dealt with by schools, will require that type of approach.

Students increasingly ask for, and need, courses which relate to the problems of daily living. Such problems may involve drug education, sex education, interpersonal

relations, etc. Problem-solving of this kind requires an interdisciplinary approach, as well as a consideration of moral and ethical issues (Unesco 1985a).

Forms of Interdisciplinarity

For the purpose of this synthesis, it is considered adequate to distinguish between the three levels of interdisciplinarity proposed at the Symposium on Interdisciplinarity in General Education:

- Pluridisciplinarity, which merely brings in several disciplines, often going no further than to juxtapose them
- Interdisciplinarity, which assumes a good knowledge of each other's concepts between the disciplines concerned and is based essentially on a systems approach
- Transdisciplinarity, even more ambitious, which assumes conceptual unification between disciplines (d'Hainaut 1986: 9)

The general forms of interdisciplinarity which may be usefully considered in the context of research or teaching are stated as follows:

- interdisciplinarity of neighbouring disciplines
- interdisciplinarity of problems
- interdisciplinarity of methods
- interdisciplinarity of concepts (d'Hainaut 1986: 10)

Four forms of interdisciplinarity with reference to the curriculum have been proposed in an Australian case study:

i) Interdisciplinarity through correlation of subjects

There are many ways of correlating subjects. In the case study presented by P. Hughes, subjects (called 'basic and essential learnings and experiences') are considered as one dimension of a three-dimensional set whose other dimensions are learning processes and learning environments.

ii) Interdisciplinarity through themes, topics or ideas

This approach, in one of its two major forms, can be very like the preceding one. The use of a theme as an organizing or integrating element can be used to show different disciplines interrelate in the elaboration and illumination of the theme. This both assumes a disciplinary base and strengthens the understanding of the

disciplines themselves as they are used in sequence or in concert to pursue a given theme or topic.

iii) Interdisciplinarity in practical thinking

There are, however, areas of the curriculum which do not fall into traditional subject areas. These are in the main practical areas whose importance is made clear by individual or social demands. The approach will not be interdisciplinary in the sense of seeking an integration of different disciplines, but rather of helping students develop a capacity to operate effectively in the particular field. Civic education is a case in point.

iv) Interdisciplinarity through the learner's own interested inquiry

A further variation of approach is to make the learner's own interested inquiry the basis of the curriculum. This, by its nature, cannot be a discipline-bounded approach, since an area of inquiry will not necessarily confine itself in such a way if it commences with the interests of a student. It will be an interdiscilinary approach where a variety of relevant disciplines is used to illuminate and structure the inquiry. It is not easy, or even relevant, to tie in these different forms of interdisciplinarity with levels of interdisciplinarity regarded from a general standpoint. However, on the whole, it may be said that these educational approaches lie at the level of pluridisciplinarity, with a more or less marked tendency towards the interdisciplinary level proper, particularly in the first and fourth types of approach, in which disciplines are integrated in the learner's own build-up of knowledge. (d'Hainaut 1986: 12)

2.3.3. *Interdisciplinary Curricula - Some Examples*

Interdisciplinarity thus involves a variety of forms of co-operative efforts, involing disciplines, to develop and strengthen general education. One form of such co-operation is integration of a number of disciplines within a particular which is not confined to one discipline, such as environmental education, population education, education for peace and disarmament, etc. Developments in the introduction of curricula in some of these areas will now be discussed.

Environmental Education Curriculum

A new awareness of environmental matters began to develop as a result both of the global concern for the environment and of the deterioration of the environmental situation locally, and environmental education as a distinct entity emerged in the early

seventies. During this period several countries started making their own efforts to incorporate elements of environmental education into their general education curricula. In addition to these individual actions at national level, efforts were being made to strengthen activities under the auspices of the United Nations.

The guiding principles formulated at the Inter-Governmental Conference on Environmental Education held in Tbilisi, USSR in 1977 (Unesco 1978a) specifically indicate that environmental education should consider the environment in its totality - economic, political, technological, cultural, historical, moral and aesthetic. Hence, it is stated that environmental education 'should be interdisciplinary in its approach, drawing on the specific content of each discipline in making possible a holistic and balanced perspective'. A comparative study of the environmental education curricula of several countries has revealed that:

- an interdisciplinary approach is adopted at the primary level
- a multidisciplinary approach is adopted at the secondary level
- a holistic perspective encompassing the physical, ecological, social, cultural and other aspects of the problem is generally adopted in all cases (Unesco 1985a: 124)

A significant observation that is made is that all the countries have adopted the strategy of "infusing" subject matter relative to the environment into the different disciplines of the traditional curriculum in their attempt to integrate the environmental dimension with the general education curriculum. This has resulted in the emergence of a multidisciplinary approach which is evident particularly at the post-primary levels. Of the traditional subjects, natural and social sciences have had the benefit of absorbing the largest share of environmental concepts in this infusion approach.

Population Education

The concept of population education, which first emerged a decade or so ago, has gradually come to include within it a more clearly defined and operationally meaningful content as a result of various national and regional experiments carried out with the support of Unesco and the United Nations Fund for Population Activities. The World Population Conference held in Bucharest in 1974 had stressed the need to look at population issues from a global viewpoint, and called particularly for due consideration to be given to environmental issues and the quest for a new international economic order. It is no longer possible to talk of population dynamics

without referring to the necessary but difficult task of controlling ecological and economic equilibria on which life is dependent. This view of the problem calls for analysis and action, for knowledge that mankind must acquire and master, and for practices that must be developed if we are to survive. In the conceptualization of population education, stress is laid upon the interrelationships between population processes and quality-of-life outcomes within a wider context which will explain how social, economic and practical forces generate these interrelationships (Unesco 1978b: 95).

The interdisciplinary nature of population education is clearly brought out in the following report (Unesco 1981b: 11):

> Translated into pedagogical terms, population education should allow learners to acquire the knowledge, abilities, attitudes and values necessary for the understanding and evaluation of the prevailing population situation, the dynamic forces that have shaped it, and the effects it will have on present and future quality of life.
>
> One of the very goals of population education - and thus its contribution to educational innovation and renewal - is to contribute to the development of new participatory methodologies and to the relevance of curriculum contents. It is a point of fact that if these contents include issues such as demographic dynamics, the production and distribution of goods, social justice, the improvement of the quality of community and cultural life, the environment, health, nutrition, human sexuality, and relations within the family on both the macro level (that of the society) and micro level (that of the individual or family), then it shows that population education on the basis of an interdisciplinary approach, aims at the updating of curriculum contents by integrating these present-day problems and concerns.

Education for International Understanding, Co-operation and Peace and Education Relating to Human Rights and Fundamental Freedom

International Education was conceived essentially as interdisciplinary, and many subjects through which it could be infused were identified; some of them were: national, regional and world history and geography; national and foreign languages and literature; art education and the study of civilization; philosophy; ethics; civics; religious instruction; study of political institutions; social and human sciences; the natural sciences and mathematics. It was felt that an interdisciplinary approach, which suffused all subjects and activities, was more effective than the introduction of

separate, unrelated subject matter (Unesco 1983a). It has also been recommended that this topic should be treated adequately at all levels of the education system so that it forms an integral part of general education.

Science and Technology Education

Dealing with the implications of the development of science and technology in the last century for the content of general education, a Unesco publication (Unesco 1983b) states that these will bring to the school curriculum new areas of interest and new methods of thinking and understanding. These could include an increased interest in field studies and in a "systems" approach across all the sciences. One of the recommendations made to meet this situation is to consider how best to develop an integrated science curriculum that is 'more than a superficial summary'. Through such a curriculum schools provide access to basic scientific and technological ideas if young people are to develop an awareness of the ways in which science, technology and society interact. Science can thus claim to make an important contribution to education as a whole and to justify being given a place at the 'core' or the central part of the curriculum of general education. It was also unanimously recognized that science and technology education should be associated with productive work, in order to prepare the rising generation to cope with the problems of everyday life and the community, and at the same time to foster positive attitudes to work.

The importance of an interdisciplinary approach was emphasized as being essential both in education as a whole, and in the teaching of science and technology in particular which, it was stressed, should be linked with the teaching of social sciences and humanities (Unesco 1981a: 18).

In a Unesco publication entitled *Terminology of Technical and Vocational Education* (1978), the term 'technical and vocational education' is referred to as "those components of the general education curriculum which introduce pupils to the elements of technology, in order to acquaint them with the role of technology in contemporary life and permit them to develop basic practical skills in the manipulation of simple tools and materials".

At the primary level, the term 'technology' is accepted to mean the simple application of scientific skills and concepts in everyday life and includes initiating children into such processes as problem-solving, decision-making and design, which are essential for effective participation in the modern world.

With regard to the choice of content in the science and technology education curriculum at the primary level, the following observation may be noted (Unesco 1983b: 86):

> While the choice of content must be a matter for each country to determine, it has been suggested that two broad criteria for selecting content might be applied, namely its richness in developing children's intellectual skills and its relevance to the social, cultural and environmental setting of children. Thus, content might include simplified knowledge about the children themselves, their nutrition, their environment and its phenomena, as well as the basic principles of the biological and physical sciences, the physiology of human systems, the principles of hygiene, and the conservation and rational uses of the environment. At each stage of development, the curriculum will also include some simple technology, so as to help children achieve some basic technological capabilities. Certain topics from the middle and higher grades might stress the applications of science. These might consider the economic, social, ethical and aesthetic contexts in which appropriate applications are made. Topics for the higher primary-school levels could be based upon the facts, principles, phenomena and problems of their immediate environment.

The interdisciplinary approach suggested for the science and technology education curriculum is reflected in the following (Unesco 1983b: 88):

> What seems to be required in secondary-school education is a clear and precise development plan which exposes all pupils to scientific and technological ideas through:
> - The study of science in the context of courses such as biology, physics, chemistry or integrated science. The study of the application of scientific knowledge in specific contexts such as in environmental science, rural science, engineering science and in craft, design and technology.
> - The exploration of scientific ideas 'across the curriculum' - in the context, for example, of other subjects such as social studies and home economics. This, reciprocally, may call for an examination of the ways in which ideas from other disciplines can be incorporated into the formal science curriculum.

In the development of content, methods and materials, an integrated approach has been recommended (Unesco 1983b: 115):

The term 'integrated science education' has been defined in many ways. One which has gained wide acceptance defines it as those approaches in which the concepts and principles of science are presented so as to express the fundamental unity of scientific thought and to avoid premature or undue stress on the distinctions between the various scientific fields. Such a definition encourages a wide diversity, not only in specific topics chosen for inclusion, but also in the overall organization and structure of those programmes considered to be integrated science. Integrated science programmes can be viewed in terms of the 'scope' - that is, the range of disciplines and fields of study from which their content is drawn - and also in terms of the degree to which their subject-matter is integrated. This latter dimension is sometimes referred to as 'intensity' of integration.

At the primary-school level, almost all science courses are integrated, and science in primary schools is never taken to mean the teaching of separate science disciplines, such as physics, chemistry and biology. But in secondary schools, 'integrated science' is a relatively new phenomenon. At this level we can differentiate between varying scopes of integration in order of their increasingly broad range of coverage. Integration may be: (a) between two close natural sciences (chemistry and physics); (b) among several natural sciences (physics, chemistry, biology, astronomy, geology, etc.); (c) among basic and applied sciences and technology; (d) between natural and social sciences; and (e) between science and humanities.

Relationship with Productive Work and Community Development

The main aim of work-oriented education is to "provide opportunities for integration of theory and practice and application of acquired knowledge". An important principle in such a curriculum would be that "work-oriented programmes should be integrated with other areas of the curriculum" (APEID 1976: 16).

The emerging trend is that efforts are being made to embed work experience in all subjects across the curriculum rather than introduce it as an aspect or adjunct of vocational courses only (APEID 1983: 5). The regional planning panel which met in 1982 (APEID 1983) also identified some basic principles, among which are that:

- teaching of arts and work experience should be interlinked
- there should be parental and community involvement
- work experience should promote positive attitudes to work, inculcate work habits and develop work ethics
- it should be embedded in all school subjects

The role of education in the achievement of development goals, particularly in

rural development, has been recognized, and hence another dimension is added to general education. It is now asserted that:

> education can play a significant role in creating general awareness about problems of development and causes of stagnation of the economy, in emphasizing self-reliance among people based on knowledge of the social and physical environment, in the revitalization of local institutions, utilization of locally available raw materials and rural technology and, above all, in improving the quality of life by ensuring a minimum standard for all through increase of income and employment potential. (Unesco 1982: i)

The content and learning experiences, to achieve these objectives, "should be based on an environmentally-related activity-oriented approach. Children would discover concepts and principles by observation, experimentation and problem-solving activities related to their own surroundings and conditions of life" (Unesco 1982: 3).

Health, Nutrition and Physical Education

In recent years health and nutrition have become accepted as essential components of the general education curriculum. Health and nutrition education curricula of most countries cover both health and nutrition as well as physical education as a major aspect of health education (APEID 1981). Health and nutrition education, in most countries, is introduced not as a separate subject, but is integrated in groups of subjects or infused in other subjects; in other words, an interdisciplinary or multidisciplinary approach is adopted.

Nutrition appears at general education level within themes in primary school and within subjects such as general science, biology and home economics at secondary level. Nutrition education could with advantage form part of a core of subjects in secondary schools which would include science, and social life skills (Unesco 1985b).

2.3.4. *The Advantages of Interdisciplinary Approaches*

The advantages of organizing contents and learning using an interdisciplinary approach can be seen when one examines the new curricular areas described above and the innovative learning-teaching strategies associated with them. Some of these advantages have been identified by Rassekh and Vaideaunu (1987: 215) as follows:

Coupled with other approaches or principles such as lifelong education, the application of research findings on the learning process and the use of computers, interdisciplinarity could help in the future:

1. to open the way to the introduction of new contents, particularly education for peace and democracy, education relating to the quality of life and of the environment and education for development;
2. to streamline curricula and the learning process;
3. to democratize education from the standpoint of pupil achievement;
4. to promote a problem-centred approach which would strengthen the conviction among learners that science serves to solve real problems.

These are substantial advantages which will assume increasing weight in the future....

An interdisciplinary organization of the contents to be studied, by building bridges between subjects without detracting from their specificity, is appropriate both from the *objective* standpoint (the development of contemporary science, the multidisciplinary nature of the specific problems to be solved, etc.) and from the *subjective* standpoint (learners' needs). To put it another way, unity genuinely exists in diversity, but its discovery through systematic mental effort will constitute an intellectual achievement. The perception of the unity and diversity, or specificity, of things thus represents an ultimate goal of the learning process and corresponds both to a need in the learner and to a concrete reality, and such a discovery is accompanied by a not inconsiderable intellectual satisfaction, since it can make for more effective learning.

Implicit within this increased relevance of the organization of contents to the characteristics of contemporary science and the psychological and philosophical needs of the learner is a solution to another genuine problem, i.e. the unfortunate 'slicing up' of general culture into separate parts; interdisciplinarity is a way of overcoming the drawbacks arising from the juxtaposition of isolated subjects.

A good many researchers and educators rightly look to a reorganization of subjects from the standpoint of interdisciplinarity as a way of increasing the efficiency of the learning process. It has been pointed out that expanding the links between subjects points up the key ideas of contents, eliminates a certain amount of redundancy and, thereby, simplifies the learners' task....

Interdisciplinarity is associated logically with other principles or characteristics of a relevant content, i.e. coherence, balance, the pleasure of learning, a forward-looking approach and the spirit of lifelong education....

Seen in relation to the educational process, the promotion of interdisciplinarity is a way of co-ordinating the various types of contents - formal, non-formal and informal; the strengthening of the connections between subjects helps to strengthen the role of

codes of reference and codes of interpretation - these become focal points around which the information acquired outside school can be organized and turned to account. So long as the school learning process remains compartmentalized and too much centred on the preoccupations of individual subjects, the discontinuity between formal and informal education will remain almost total; the experience acquired outside school will represent a mass of vague images and ideas which is seldom referred to.

There are then both theoretical and practical advantages - already identified or to be verified in educational practice - that argue in favour of interdisciplinarity. Interdisciplinarity opens up new prospects not only for researchers and those responsible for curricula but also for educators and teacher educators.

2.3.5. *Problems and Issues Related to Interdisciplinary Curricula*

Innovations in education are always confronted with problems and difficulties, and interdisciplinarity is no exception. The difficulties are connected with the nature of interdisciplinarity, the inertia of the existing system, teachers, textbooks and teaching materials, parents and evaluation (d'Hainaut 1986: 54).

Interdisciplinarity by its very nature does not provide a clearly demarcated structure with logical and well-defined sequences to follow as in the case of the traditional disciplines. Consequently, it does not conform to established learning-teaching procedures. There is also the problem of depth as against the breadth or scope of the disciplines that are covered in an interdisciplinary approach. It is not easy therefore to design a coherent and balanced interdisciplinary curriculum to meet a variety of needs of different categories of learners.

Attempts to introduce an interdisciplinary approach must overcome the inertia which manifests itself in the form of 'scepticism of educational planners and teachers, the resistance of those who prefer the comfort of the status quo and of routine to the adventure of change, and the doubts and fears of cautious teachers aware of their responsibilities'. It also often calls for a new conception of the use of school space and time which is difficult to achieve in the traditional organization of the school.

Some teachers lack confidence in interdisciplinarity because they do not always clearly perceive the relation between their profession and the goals of education, and the socio-economic and cultural needs of the community. Many of them have a narrow and sometimes a wrong conception of interdisciplinarity equating it with lack of depth, inadequate content, amateurism, abandonment of a structured knowledge and

mastery of a given subject. A large majority of present-day teachers have not been oriented to an interdisciplinary approach during their pre-service education and have considerable difficulties in adopting it at a later stage of their professional career.

Lack of adequate teaching and learning materials, such as teachers' guides and pupil texts, presents difficulties in implementation.

The usefulness and validity of interdisciplinarity is not universally accepted, and considerable opposition and resistance comes from certain groups outside the educational system such as parents, politicians and other interested parties in a position to influence public opinion.

> Where education is concerned, many parents are very traditional. They fear that their children will pay the price of an experiment that has no future, and they prefer good old proven methods to innovative ventures, especially if the innovation is not unanimously approved by the teaching profession ... The opinion of parents influences politicians and decision-makers who do not know what interdisciplinarity is ... and tend to reject a school which is very different from the one they have known, and to which they owe their knowledge and sometimes their position. (d'Hainaut 1986: 60)

Finally, experience has shown that evaluation of learning based on interdisciplinary curricula poses serious problems. Evaluation of learning associated with practical field experiences, projects, socio-affective aspects, etc., as demanded by an interdisciplinary curriculum, cannot be easily coped with through traditional evaluation procedures. "The difficulty of evaluation that is specific to interdisciplinary education stems from the fact that the pupil is placed in a situation close to reality, often of a complex nature, to which a simple and standardized response is not always expected of him" (d'Hainaut 1986: 57).

2.4 General Education from the Perspective of Lifelong Education

Lifelong education is regarded as a principle which is likely to direct and influence all innovations and reforms of educational structures, contents and methods and hence has major implications for the content of general education. The concept of lifelong education adds a further dimension to general education at school level, that of integration of school and school activities with the community and community

development (Dove 1982). This has implications for the priorities, flexibility and integration of curriculum content (Hawes 1975).

2.5 Core Curriculum

Another aspect of curriculum integration and balance which needs some attention is the development of a common core of basic knowledge and values relevant to the general education of all children.

Many countries tend to make a distinction between two parts of the content of the curriculum - a common core or a compulsory minimum for everyone on the one hand, and various options to meet the needs of different categories on the other.

> The common core includes knowledge, concepts, know-how and values which the society in question considers necessary for all its members. The options constitute a series of specific contents which may be determined in the light of the aspirations, interests and aptitudes of the pupils and in the light of the needs of the socio-economic and cultural environment. This approach maintains the fundamental unity of the education system and hence preserves equality of opportunity while at the same time making it possible to provide a better response to individual expectations and to development demands. The co-ordination of specific contents and of a common core makes it possible, particularly at the level of primary education, to mitigate the serious drawbacks which result from an authoritative and uniform definition of identical contents whatever the prevailing environment, notably in countries where rural zones are widely separated from urban areas....
>
> As a new form of organization of the content of compulsory schooling, the common core and the system of differentiation provide a response to the various expectations of learners and to the demands of contemporary societies; among the latter, the following may be noted:
>
> - The need to make learning more effective and to ensure an effective democratization of education, notably from the point of view of access to, and the successful completion of, studies.
> - The need to provide the whole population of the country with a basic education conceived as a basis for moral and intellectual autonomy and for ongoing self-instruction.
> - The determination to prepare all young people to take an active part in the socio-

> economic development and the socio-cultural life of the community in which they live. (Rassekh and Vaideanu 1987: 167)

There is substantial agreement throughout the world on the areas of learning to be included within the common core, though the terminology varies, and a global review (Allen 1987) reveals that differences exist between countries in the relative emphasis on personal development and societal objectives, and the degree of national involvement. Those areas are: basic mathematical skills, moral and/or religious education, reading and writing in the mother tongue, science, society and the environment, physical education and health, and music and the arts.

The common core of knowledge, skills and values should aim at both personal growth and fulfilment, and the economic and social needs of society. It should include both what is basic for further learning and study and what is essential for effective participation in society. There should be sufficient flexibility in the learning-teaching materials and procedures to ensure local relevance and meaning. Boundaries between traditional subject areas should be de-emphasized and stress placed on the integration and application of knowledge and skills from different disciplines. The identification of a core of common knowledge, skills and values is a major issue of public policy, in which all sectors of the community have a stake. Therefore steps should be taken to ensure coordinated action at all levels and among all agencies within the education community.

The following comment about the areas of knowledge and experiences concerning the common core is worth noting (Curriculum Development Centre (Canberra) 1980: 4):

> ...It is a mistake to treat the core simply in terms of subject content ...the desirable emphasis is on learning process and kinds of experience. Thus we need to consider appropriate learning *experiences, situations* and *resources* ... such matters as *values* education, the development of *manual skills* and *reasoning processes* also enter into a consideration of the content of the core.

Rassekh and Vaideanu (1987: 168) refer to the content of a future common core which van Bruggen has analysed in a study in the Netherlands:

> He considers that compulsory schooling will have to qualify all young people for three

sorts of activity: *communication, occupational orientation and participation.* The qualifications necessary for communication with other people and within large or small groups include skills such as spoken and written communication in the mother tongue and in at least one foreign language, the ability to communicate through images and body movements (dancing, mime, photographs, films, video, etc.), the ability to seek and make use of information in all its forms, the capacity to identify values and standards and to master possible conflicts between them, and receptivity and responsiveness to others. The qualifications necessary for an effective social life include skills in calculation and the use of information technology, basic knowledge in certain fields which are seen to be important in a given national or regional environment among which may be mentioned biology, geography, chemistry, economics, physics, history, psychology, technology and sociology; the content of curricula is confined to that which necessitates a systematic presentation so as to allow for subsequent possibilities of more thorough study, and special attention should be paid to future developments and to all sources of subsequent self-instruction. The qualifications necessary for active participation in social life at the level of the local, regional and national community include the skills of day-to-day life (the preparation of meals, the repair of clothing, maintenance of the home, management of the family budget), skills in sport and leisure activities, education through the media, aptitude for self-instruction, and also the development of democratic attitudes, respect for minorities, initiative, and a minimum knowledge in the field of civic life and international relations.

This common core of knowledge, know-how and basic values which van Bruggen predicts for the future also reflects a concern with enhancing the contribution of education to the social, economic and cultural development of our societies.

3. SYNTHESIS OF NATIONAL LEVEL CASE STUDIES

An analysis of issues and strategies related to efforts to achieve integrated, balanced and relevant curricula, and a synthesis of the main findings of the following national case studies are presented in this section: Canada (British Columbia), India, Japan, Jordan, The Netherlands and the Ukrainian SSR.

Each of these case studies consists of a quantitative and qualitative analysis of the distribution and balance of the different types and forms of curricular elements in the programmes offered in general education. The analysis has given special attention to the following aspects:

- the main forms of curriculum balance taken into consideration in the given national context
- procedures used to achieve curriculum balance in relation to objectives of general education
- the manner in which the balance and distribution of content is determined
- the teaching methodology adopted to correct or reinforce lack of balance
- the relationship between the curricular areas reviewed and evaluation of student learning
- significant problems and constraints experienced in efforts to achieve more balance in curricula

The levels of the school curriculum in general education selected for the studies are the programmes offered during the fifth/sixth and the ninth/tenth years of general education, which correspond to the end of the primary level and of the junior secondary level respectively in most countries. The methodology adopted in all case studies is the analysis of curriculum documents, examination syllabuses, circulars defining the content of general education, pupils' textbooks and teachers' guides. The Ukrainian SSR has, in addition, attempted a historical analysis of experiences in balance in the curriculum, conducted a survey in schools to seek first-hand information on the education process relevant to the study, and collected further

information through a questionnaire sent to teachers, pupils and parents.

3.1 The Concept of Balance and Distribution as Perceived in the National Case Studies

The concept of curriculum balance perceived in the case studies is so broad that it involves several aspects including the formulation of goals, aims and objectives; selection and organization of content and learning experiences; learning-teaching approaches and methodologies and evaluation, all within the constraints of time, resources and environmental factors.

Of the six countries that have carried out case studies, five (the exception being Japan) have categorically stated that balance is considered to be an important criterion in the design of their curricula. Japan does not claim to show any concern over curriculum balance. Those countries that are concerned have certain common forms of curriculum balance. One that is very much emphasized is balance between cognitive, affective and psychomotor objectives and content in the curriculum. It is admitted that most traditional curricula are confined to, or heavily biased towards the cognitive domain and that concerted efforts have been made in curriculum reforms to maintain a proper balance between all three domains.

Another aspect which is equally emphasized is balance between abstract and concrete experiences, between academic knowledge and its applications to real life. The Canadian study lays much emphasis on the question of balancing the abstract and the concrete through application and asserts that "a response to the question of the gap between the two worlds is often sought in terms of application" (Aoki 1987: 31). It proceeds further to point out a danger inherent in this view in that it assumes the primacy of abstract concepts and theories and gives secondary status to the practical world of everyday life. Identification in the Canadian (British Columbia) curriculum documents "of the form of curriculum balance understood in terms of the relationship between the world of abstractions and the world of lived experiences has revealed two understandings of this relationship: (1) relating the two worlds by way of application, and (2) relating the two worlds by way of the notion of dialectic" (the notion of relationship between the abstract and the concrete) (idem).

Several countries have stressed the need to have a harmonious combination of

and balance between science, mathematics, social studies and humanities. The Ukrainian study, for example, states this as follows:

> Of utmost importance therefore is finding the right volume of information for study taken from various branches of scientific knowledge, the rational distribution of instruction time for study of social and natural phenomena, notably, the right solution to the problem of correlation of the humanities and science ... (Goncharenko and Malevany 1987: 6)

In the same context, the Indian study refers to the "scholastic and non-scholastic areas" and stresses the need to maintain a balance between them. Three factors are considered to be important in the Indian study to achieve balance in the school programme:

> (1) achieving balance among the sciences, the social sciences and humanities, (2) achieving a balance between the academic and applied subjects, (3) utilizing teaching/learning strategies and co-curricular activities as a means of achieving a balanced school programme. (Malhotra et al. 1987: 25)

An aspect emphasized in the Jordanian study, which is also implicit in others, is the consideration of the learners' needs as viewed from individual, socio-economic and cultural perspectives (Hiyasat and Abdul-Fattah 1987: 4). Such a perspective would have social, philosophical, cultural and national dimensions. The Netherlands study in a similar context refers to the 'equivalence between individual needs of pupils and the needs of society'. It also sees the need to create more interrelationships between subject areas and the way they are offered to children. It expresses a wish to have a "better connection between the educational offering on the one hand, and the psychological capacities of children and societal realities on the other hand" (Labordus 1987: 10).

In addition to the common ground covered by the different countries, several have indicated certain unique factors which they consider to be relevant. Examples are:

Netherlands: the introduction of 'new basics' such as consumer education and informatics

India: the use of creative and interactive methods of teaching to overcome the limitations of expository teaching

Canada: the balance between the core and non-core curriculum (time allocation, etc.)

Ukrainian SSR: the need for optional courses to balance basic courses

Jordan: the needs of mixed-ability classes and of both boys and girls

While not claiming to have much evidence of an explicit concern for balance in the curriculum, certain statements in the Japanese study imply that the Japanese curriculum does reveal certain elements of balance. Terms such as consistency, harmony and uniformity are used to describe the principles governing curriculum design (Japan 1987). The term 'harmony', in particular, may have been used in connection with the balance and distribution of content. Japan perceives curriculum balance as: balance in the allocation of subjects and time for each subject; balance between the knowledge content, and the learning abilities and interests of the learners; and balance between the demands of society and the contents of instruction. Recognizing these aspects of balance, Japan has made an attempt to maintain "a balance between the development stage or learning ability of pupils on the one hand and the subject content or time allocation on the other..." (Japan 1987: 10).

Jordan highlights four aspects of curriculum balance: emphasis on environmental learning; emphasis on productive work; balance of male and female education, and emphasis on vocational education. The last aspect is aimed at balancing general education by attempting to bridge the rift between theory and practice (Hiyasat and Abdul-Fattah 1987: 15-16).

3.2. **Distribution**

In almost all the national studies, distribution is interpreted to mean the different subjects into which the content is grouped, and the time allocated in the school programme for each subject. An analysis of the distribution of subjects and time shows that there is considerable uniformity and agreement among the countries concerned regarding the nature and magnitude of this exercise (see Table 1). The analysis shows that at both grade 5/6 and 9/10 levels, the content has been grouped

Table 1: Distribution of Subjects and Instructional Time

Content Areas (Subjects)	Canada (British Columbia)	India	Japan	Jordan	Nether-lands	Ukrainian SSR
	Instructional Time (as a percentage of the total time)					
Grades 5/6						
First Language	33	32	21	24	28	29
Mathematics	16	12	18	14	19	18
Science	09	12	10	14	19	16
Social Studies	09	12	10	03.5		06
Aesthetics/Fine Arts	12	10	14	03.5	13	19
Work Experience/ Vocational Training	-	12	07	03.5	-	06
Physical education/ Health	09	10	10	03.5	-	06
Moral education/ Religion	-	-	03	10	05	-
Special activities	-	-	07	-	-	-
Foreign languages		-	-	17	-	-
Other areas (English, Physical Education, Traffic education, etc.)		-	-	-	16	-
Grades 9/10						
First language	12.5	30	14	22	15	-
Science	12.5	13	14	16	10	24
Mathematics	12.5	13	14	12.5	10	17
Social studies	12.5	13	10	09	18	17
Second language(s)	-	see note	10	19	27	03
Aesthetics/ Fine Arts	option	09	07	03	09	17
Work experience/ Vocational Training	-	13	10	06	-	11
Physical education/ Health	12.5	09	10	03	09	11
Moral education/ Religion	-	-	03	09	-	-
Special activities	-	-	07	-	-	-

Notes:

1. Canada: only the core subjects are given
2. India: the time allocation under first language in grades 9/10 is for three languages
3. Japan: in the secondary level, there are several optional subjects
4. Netherlands: at the primary level (grades 5/6) there are no central regulations about distribution of time for the various subjects. The figures given show an average distribution over the entire primary education stage
5. Ukrainian SSR: the figure for aesthetics in grades 9/10 includes Ukrainian and Russian literature

under certain commonly accepted subject headings, sometimes with slight variations in the nomenclature, and that there is much common ground in the content areascovered at each level. Of course, no information is available on the depth of coverage of the content, which can be expected to vary from country to country.

Using the time allocation for each subject as the criterion of the weighting attached to it, it is seen that at grade 5/6 level, first language (mother tongue) is, in general, given the highest weighting followed by mathematics/arithmetic, science and social studies in that order. At grade 9/10 level too, the first language takes first place followed by science, with almost equal weighting given to mathematics and social studies.

In addition to the core subjects indicated in the table, several new interdisciplinary content areas are also included in the general education curriculum in some countries, e.g. environmental education, population education, basics of production, fundamentals of information and computer science, etc.

3.3. **Interdisciplinarity and Integration**

It is not easy to ascertain the extent to which the principles of interdisciplinarity and integration have been successfully applied to the general education curricula in the countries concerned without examining in depth the content and the approach to teaching and learning. The case studies do not provide sufficient information to arrive at any definite conclusions on this aspect. However, the importance and usefulness of interdisciplinarity and integration is recognized in some studies as the basis for facing the challenges posed to curriculum developers in making the general education curriculum relevant and balanced in order to meet the emerging needs of individuals and society. The Ukrainian study, for example, states that "one of the starting-point methodological principles of defining the content of general education is the philosophical principle of material unity of the world, the realization of which demands that the content of general education should present an integral system of knowledge about objective regularities of the development of nature and society" (Goncharenko and Malevany 1987: 6). This principle has been applied, at least to a limited extent, in most countries particularly in the two areas of integrated science and social studies. It is thought that these subjects create good conditions for developing in children the ability to synthesise, systematize, classify and contrast information, to infer conclusions and to move from deduction to induction.

Countries which have adopted an interdisciplinary approach to science have replaced their traditional science curricula based on chemistry, physics and biology as

separate subjects with integrated science courses covering in addition to the three main areas mentioned above, new areas such as astronomy, earth science or space science. In addition to imparting knowledge about the concepts, theories, processes and attitudes related to science, it also aims at enabling the learner to understand the interaction of the physical, biological and social factors of the environment with a view to developing capacities for comprehending the processes and problems related to everyday life, e.g., in the fields of agriculture, industry, health and nutrition, environmental protection, population issues, and use of energy and material resources. Similarly, the traditional subjects, history, geography and civics, have been replaced by social studies, which covers a much wider range of objectives and content than the separate subjects. The aims of the social studies curriculum are described as follows in the Indian study:

> The study of sciences is visualized as facilitating the child's growth into a well-informed and responsible citizen. It aims at developing in the child an understanding of his physical and social environment, both immediate and remote, in terms of space and time, and an appreciation of the cultural heritage of India. The study of the present physical and social environment, is aimed at helping the child in developing an understanding of the interaction of man with his physical and social environment and of the institutions - social, economic and political - through which human beings interrelate with one another and function in the society. The study of social sciences is also aimed at enabling the child to see the present in the perspective of the past (Malhotra et al. 1987: 15).

3.4. **Experiences Related to a Core Curriculum**

The term "core curriculum" is used directly only in two studies, viz., Canada and the Netherlands. In the Canadian study "the core or basis, as it is sometimes called, is understood as 'that which must be taught' and is formulated in a set of thirteen prescribed goals of education" (Aoki 1987: 5). The "core subjects", which are common for both primary and secondary levels, are given as Language Arts, Mathematics, Science, Social Studies, Health, Physical Education and Fine Arts. These are considered to be necessary and sufficient to meet the skills and knowledge needs generally accepted as fundamental or basic to the education of all children and young

people throughout the province of British Columbia.

Intensive discussions have taken place in the Netherlands about the most desirable contents of basic education or a core curriculum for all pupils. Important items in the discussion include: technological education for all; information technology; and questions related to consumer education, development education, domestic art and global education. They conclude that for secondary education no reasonable consensus seems to be reached about the core. However, the following are stated as the most important characteristics of basic education (core curriculum):

> a) it is concerned with basic skills, that is, the acquisition of knowledge, skills and insights that are indispensable for the ability of individuals to function in society and which provide an essential basis for further development;
> b) it is concerned with education for all, that is, the content of basic education does not differ for any specific groups;
> c) it is communal education, that is, the education is in principle directed towards the communal assimilation of the same curriculum. Any forms of differentiation between pupils in anticipation of further education are in principle avoided. (Labordus 1987:15)

Considering the interpretation given to the concept of a core curriculum by these two countries, it appears that the courses of study prescribed for the compulsory stage of education could be considered as a core curriculum in the other countries as well.

3.5. **Procedures Adopted to Achieve Curriculum Balance**

The procedures adopted to achieve curriculum balance may be considered in two main categories: those which maintain a balance in the objectives, content and distribution of instructional time; and those which utilize teaching-learning strategies and co-curricular activities as a means of achieving a balanced school programme for individuals.

Different countries have evolved their own conceptual framework and forms of curriculum balance and integration on the basis of their own needs and resources. An important determinant of the variation in approach from country to country is the extent to which a particular country decides to depart from a subject-centred curriculum to one based on real-life experiences. Various forms of curriculum balance

and integration actually tried out and practised in some countries are described in some detail elsewhere (Unesco Institute for Education 1987: 11-16). One interesting feature observed in most of these approaches, particularly at the primary level of education is that they are built around the *environment* and the *real-life experiences* of the learner. These attempts rest on the principle that integrated curricula based on the environment of the child and the integration of learning with his real-life experiences are necessary for a proper understanding and appreciation of the environment, human endeavour and society. It has been emphasized that if the integrated approach is to provide meaninfgul and purposeful learning situations, it is necessary to select appropriate activities and to formulate instructional objectives on the basis of the needs and interests of the learners, their mental maturity, the aspirations of the community and the resources available for implementing the programme effectively.

There seems to be some concern regarding the degree of integration and the articulation of subjects and integrated teaching as the level of learning advances from primary to secondary and higher education. In the early stages, a high degree of integration is considered to be both desirable and practicable. At the secondary level the growth of formal thought apparently necessitates increasing subject differentiation and hence, instead of a fully integrated approach, a semi-interdisciplinary approach is preferred. Thus many courses in humanities, science and social studies at the secondary level seem to respect the individuality of subjects but attempt to present them in a co-ordinated and coherent form.

The second aspect is concerned with teaching-learning modalities, methodologies, co-curricular activities and structures associated with curriculum balance. There is awareness among curriculum developers that focusing only on the teaching-learning process in the classroom situation does not provide a complete curriculum balance. Learning takes place equally outside the classroom, and hence there is a need for greater interaction with the community and the local environment. The techniques and modalities of learning and teaching should provide the children with a greater degree of initiative and active participation in the learning-teaching process. The quality of the learning-teaching materials and the competencies of the educational personnel are also of importance in achieving balance. Modular training materials, radio and television programmes and face-to-face in-service education programmes have been utilized to improve the quality of the teachers and teaching materials.

3.6. **Evaluation**

Evaluation of pupils' learning to assess the extent to which the aims and objectives specified in the balanced curriculum have been achieved appears to be the weakest component of the learning-teaching process. In most countries, evaluation of pupils' learning is confined to the traditional type of written examination, which is generally limited to the testing of the knowledge component of the cognitive domain. The higher levels of learning associated with the cognitive domain (comprehension, application, analysis, synthesis and evaluation) are seldom covered adequately in these conventional examinations; the psycho-motor and affective domains are not attempted at all. This creates a serious obstacle to the achievement of the objectives of a balanced general education because examinations have a strong back-wash effect and control learning-teaching strategies. Pupils and teachers tend to learn/teach only what is likely to be tested.

The peculiarities associated with the evaluation of interdisciplinary and integrated curricula have been summarized as follows:

1. The objectives aimed at by interdisciplinary education are generally situated at higher levels than in intradisciplinary education. The results expected of an interdisciplinary education are generally:
   - the ability to transfer what has been learned to new situations
   - the ability to perceive situations in their entirety, in their diversity, and in their complexity
   - the ability to handle such situations in a relevant manner
2. Interdisciplinary education takes place, at least in part, in the field or in the community. Consequently its evaluation must also take place in the field and in the community.
3. The general aim of interdisciplinary education is to make the pupil capable of dealing with real problems; evaluation should therefore take the form of facing the pupil with real problems in which he is effectively and really involved.
4. The content of interdisciplinary education is often tied in with local conditions and varies from one region to another, even from one locality to another. (d'Hainaut 1986: 71)

Some general problems regarding evaluation of interdisciplinary curricula were mentioned earlier in section 2.3.

Attempts have been made in some countries to overcome some of the limitations of traditional examinations and introduce innovative methods of assessment which cover a wider range of objectives than before. The Ukrainian study, for example, describes an 'attainment control procedure' which demands that every pupil carries out assignments at four levels which correspond to the main stages of cognitive activities: recall; comprehension; and application of knowledge under (a) standard conditions and (b) non-standard conditions (new situations). It is also stated that assignments of an interdisciplinary character at different levels of complexity are increasingly used in the teaching and evaluation process (Goncharenko and Malevany 1987: 32). However, there is no evidence in the national studies of any attempts made to cover the affective and psycho-motor domains and the other wider and more complex objectives which have been stated as prerequisites for a balanced curriculum in general education.

3.7. **Problems of Balance and Integration**

A review of activities concerned with the renewal of the content of general education with a view to making it more relevant and balanced reveals concern over the inadequacy of the traditional curricula which still prevail in many countries. It is observed that these curricula are based on certain traditional assumptions and on the historical growth of disciplines or subjects rather than on educational principles. Some of the problems and issues confronting attempts to bring about curriculum reforms, as implied in the country studies, are discussed in this section.

The challenge faced by curriculum developers in attempting to design interdisciplinary and integrated curricula is to satisfy the requirements of both *depth* and *breadth* in the knowledge and abilities that are expected to be imparted in general education. While it is maintained that the traditional subject-centred approach emphasizes depth at the expense of breadth, the integrated approach is criticized as having the opposite effect. There is some concern that integrated teaching tends to produce superficial coverage over a broad area with a consequent loss of consolidation with the disciplines. The problem is how to maintain a proper balance

between depth and breadth. Some countries which have been concerned about the adequacy of a total integrated approach have adopted a partial curriculum integration. For example, it is generally believed that the acquisition of basic skills relating to language and mathematics requires a certain amount of systematic and structured instruction in separate subject areas.

Another practical problem that arises in an integrated approach is attributed to the fact that while subjects (disciplines) are well structured and suited to progression and evaluation, integrated activities are often more complex and disordered. This creates a problem for teachers to evaluate the progress of the pupils in the many areas of educational development. New instruments and techniques suited for the integrated approach have to be developed to overcome the above problem. Examination systems in most countries presuppose a subject approach to teaching and discourage the adoption of an integrated approach. Administrative action to remove the subject bias in general education would depend on modifications of admission procedures to higher education and specialization.

The integrated approach is considered essentially a pupil-centred activity whose purpose is to help pupils to develop the ability to integrate knowledge for themselves and find meaning in what they learn. It follows from this consideration that one of the principal tenets of integrative education should be self-learning and self-directed learning. This places a very large measure of responsibility on the child for his own learning. A problem arising out of this situation is whether all children possess in equal measure the capacity and the motivation to fulfil this responsibility.

It is sometimes asserted that while the integrated approach is suitable for the average or below average child, subject studies are more appropriate for able children. This viewpoint, if accepted, would lead to the justification for having two parallel curricula, one for the average and below average and another (superior one?) for the above average. Needless to state, such an approach would create many problems of a socio-political nature.

Integration has caused a certain amount of anxiety among teachers. Some see it as a threat to their specialization, which limits their competency to teach only one or two subjects. Others are faced with problems because they have not received adequate training in the approach. This has implications for both pre-service and in-service teacher education. Teacher education programmes have to be renewed and closely geared to the competencies that are needed for teaching integrated curricula.

Two important characteristics of the general education curriculum are considered to be breadth and balance. The breadth dimension has already been considered under integration and interdisciplinarity. Balance has been considered not merely from the point of view of knowledge conveyed through school subjects but from a multi-dimensional view including aims and objectives, content, methodology, structures and settings available for learning. Several important questions have been raised in connection with the balance and distribution of the curriculum:

- should the entire content be given over to problem-solving education?
- should the study of contemporary problems (e.g., environmental education, population education, education for development, education for peace and international understanding) be regarded as extra subjects or should they be considered as topics providing a thread of continuity between various disciplines?
- what should be the balance between the cognitive, affective and psycho-motor domains?
- what should be the balance between academic subjects and introduction to the world of work, preferably including some elements of productive work?
- how should the curriculum be phased at the various levels - primary, lower secondary and upper secondary (vertical distribution)?
- how should the content be distributed over the various formal and non-formal settings available for learning (horizontal distribution)?

With regard to the relevance of the curriculum, one could identify certain stated or implied criteria for the selection of the content, on which there appears to be general agreement. They belong to three categories: what is regarded as educationally worthwhile; what is regarded as relevant; and what is regarded as teachable. What is considered to be *worthwhile* is that component of man's cultural heritage which is supposed to be applicable to any society, whereas those principles applicable in any given context to one specific society are considered under *relevance*. Thus, science and social studies are considered to be both worthwhile and relevant. But the question that is often raised is who determines what is worthwhile and relevant, and for whom? In a world separated by the generation gap, is it valid for adults or the elite to decide what is worthwhile and relevant for the future generation and for the

masses? Such questions have often been raised in discussions on relevance.

There is general agreement on the criteria for relevance in the choice of objectives and content in general education. They refer to the need to bring education closer to life, to the natural and social environment of the learner, to the world of work, and to current problems facing individuals and society; preparing the learner for his manifold responsibilities in a changing world and for understanding and facing current problems; fitting the individual to his environment; and creating a national and cultural identity.

Another factor which has emerged in the process of curriculum change is the need for decisions regarding priorities. The school curriculum cannot contain everything that is considered to be 'worth teaching'. The criteria of relevance have to be taken together with the limitations of time and other resources in organizing the teaching-learning process. Apart from the more fundamental and philosophical questions relating to the nature of knowledge and education, there are some issues of a more immediate and practical nature such as:

- changes in society and changes in values
- economic changes and requirements of the world of work
- political changes
- changes in knowledge and culture
- changes in education sciences

The issues of distribution, balance and relevance, when applied to curriculum revision, are usually considered in the context of the above factors. The importance and the weighting given to any particular factor(s) depend on the circumstances prevailing in the individual countries.

In addition to the above-mentioned problems, there are difficulties arising out of lack of learning-teaching materials, of suitably qualified teachers, of facilities needed for more innovative approaches to learning, etc.

4. SOME GUIDELINES FOR CURRICULUM DEVELOPERS AND TEACHERS

A brief summary of some practical guidelines for curriculum developers and teachers formulated at the various seminars, meetings, symposia and workshops cited in the publications reviewed in this synthesis is given below.

4.1. Approaches to the Development of the Curriculum

The general practice that is observed in many countries is to develop the curriculum for general education on the basis of policies and guidelines laid down by the national governments from time to time. The actual task of the development of the curriculum therefore takes different forms. In general, three approaches to the development of the curriculum are observed:

1. The centralized approach
2. The decentralized approach
3. A combined (mixed) approach

In the first case, a group of experts at the national level is brought together centrally to design a learning programme which constitutes the basis for the curriculum in all schools in the country. This approach has its limitations and has been criticized mainly on the ground that it lacks participation at the design stage by users at the grass-roots level such as teachers and supervisors. In the second case, the teachers and other personnel who are the users themselves develop the curriculum plan and instructional materials on the basis of their experiences, the needs of the learners and the environment. Such a curriculum has a greater possibility of being more relevant to the local situation and of being accepted more easily. In the combined or mixed approach, the groups of designers comprise the experts with professional experience, background and ability, and the teachers who assist in working out the details of the teaching and learning structure. This approach, in which the expertise of both the theoreticians and the practitioners is brought together, is recommended.

4.2. Procedures for Developing the Curriculum

A major problem confronting planners and designers of curricula is the formulation of suitable criteria for the selection and organization of content to construct a balanced and relevant curriculum to meet specific needs. The International Symposium on Interdisciplinarity in General Education (July 1985) proposed six criteria for this purpose (d'Hainaut 1986: 17):

i) Relevance to educational goals: we have to know to what extent the way of presenting and organizing knowledge and problems matches educational goals; whether the situations in which the pupil is placed and the ways of structuring knowledge fit in with the hoped-for results of the educational process.

ii) The transferability of what is learned: this means the extent to which the form of organization of acquisition of the content favours the pupil's ability to apply what he has learned to new situations or to combine the various things that he has learned in order to work out solutions to problems which he has not been taught.

iii) Motivation: the degree to which the pupil is motivated by the situations in which he is placed to acquire and organize new knowledge.

iv) Compatibility with learning progression: this is the extent to which the form of presentation or acquisition and organization of knowledge conforms to the structure of the prerequisites. A high degree of compatibility means that the form of organization and presentation of the content allows the pupil to progress easily from the known to the unknown and does not place him in situations where he has to make use of knowledge and engage in activities which have not been learned.

v) Structuring capacity: this defines the aptitude of the form of presentation of the content to provide a structure which organizes knowledge as and when it is acquired. The structuring capacity of a method is important because learning meaningful content implies a structuring by the pupil of elements of the situations in which he is placed.

vi) Feasibility: this is the ease with which the form of presentation, acquisition and organization of content may be adopted; to it may be added the level of competence required of the teacher and how readily he accepts the approach. The cost of adopting the form of organization concerned may also be included in feasibility.

These characteristics make it possible to make a discriminating judgement and to arrive at decisions as to the choice of a form of presentation or organization of content, and in particular to make a deliberate choice between a discipline-oriented

approach and interdisciplinary approaches.

4.2.1. *Use of an Interdisciplinary Approach for Restructuring the Curriculum of General Education*

The traditional subject boundaries and structures have to be modified if an interdisciplinary approach is to be applied successfully in restructuring the curriculum. In this context, the above-mentioned symposium recommends the following procedure (d'Hainaut 1986: 42-43):

i) Develop an analysis of contemporary culture, to provide a comprehensive statement on the common elements of the culture to be included in the curriculum of general education.
ii) As a part of this analysis, highlight essential values and skills of the culture, identifying the challenges to which each is subject.
iii) Develop a curriculum matrix in which current subjects are considered in terms of their contribution to common elements of the culture, and core values and skills (see Table 2).
iv) This can be the means of developing a core curriculum, common to all, beyond which students may follow electives to extend their interests and to allow limited specialization.

4.2.2. *Design and Formulation of an Interdisciplinary Curriculum*

There is no universally valid approach and procedure for designing and formulating a balanced curriculum. However, certain broad principles and general lines of action which have been identified at various Unesco seminars have been summed up as follows (d'Hainaut 1986: 61-64):

> Educational intentions and goals must be determined by the social, economic and cultural needs of the community and by the needs and aspirations of individuals. These needs and aspirations are influenced by the values prevalent in the society in question and by the values adopted in educational policies. From the goals, intentions and aims of education are deduced the teaching objectives and contents which determine teaching strategies, teaching resources and evaluation content. The evaluation of the curriculum covers the objectives, strategies, teaching resources and the results obtained by pupils;

Table 2: A Curriculum Matrix

	SUBJECTS			
Common Elements	S 1	S 2	S 3	S .....etc. 4
E 1				
E 2				
E 3				
.				
.				
.				
etc.				

	SUBJECTS			
Core Values	S 1	S 2	S 3	S .....etc. 4
V 1				
V 2				
V 3				
.				
.				
.				
etc.				

Source: d'Hainaut 1986: 43

this evaluation enables readjustments to be made so as to improve the results. The objectives and content, teaching strategies and resources, and the form of evaluation determine the objectives and content of teacher training.

This logic may be represented schematically as follows: (see Fig. 1)

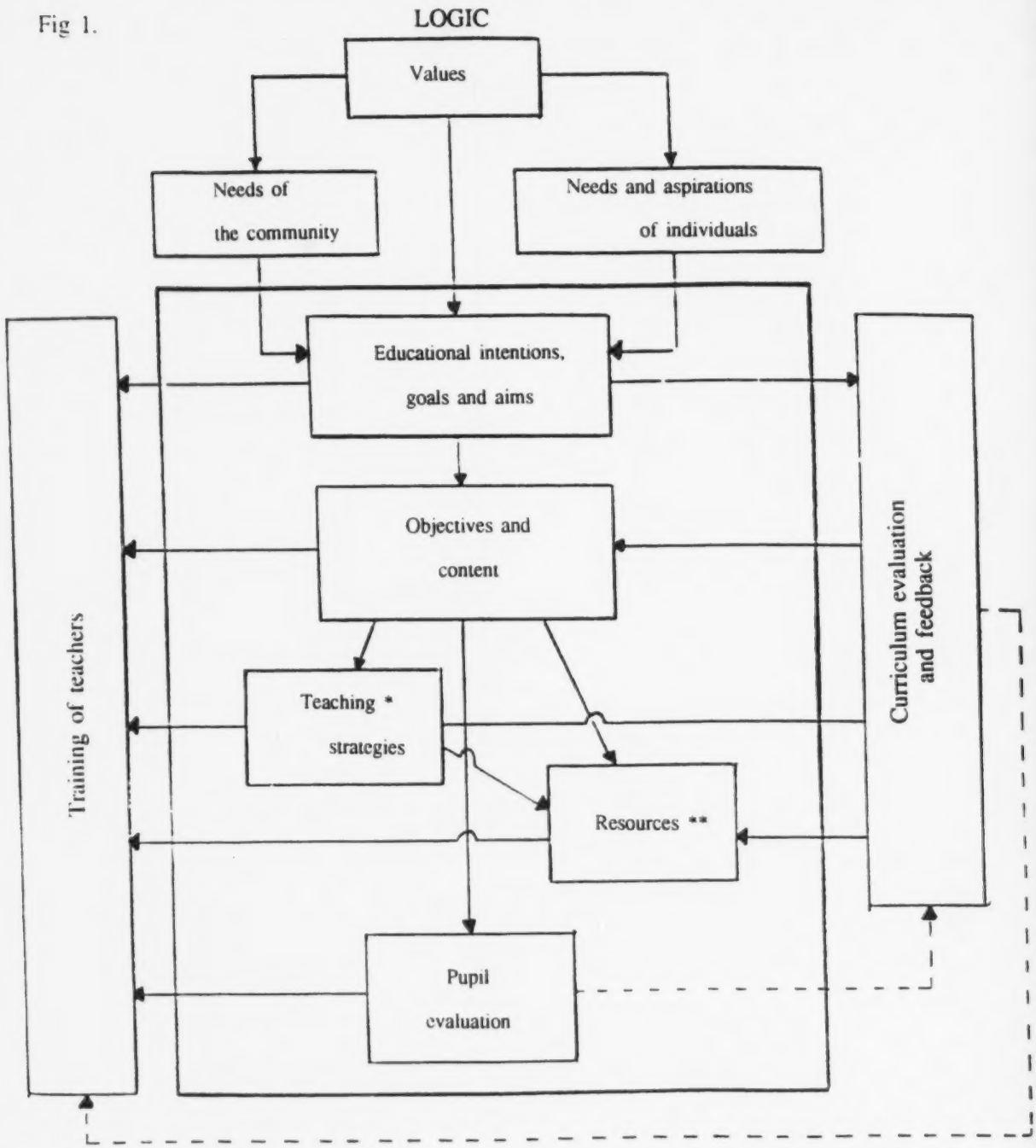
To design an interdisciplinary education, we therefore have to proceed as follows:

1. analyse the social, cultural and economic needs of the community together with the needs and aspirations of the pupils or their parents;
2. accurately analyse the national educational policy so as to clarify the educational intentions, goals and aims and select the values to be promoted, the priority needs to be met, and the aspirations to be encouraged and served;
3. set precise objectives and link these with interdisciplinary contents or situations falling within different disciplines;
4. select or develop teaching strategies; in particular, choose from within and without the different juxtaposed or integrated disciplines, themes and situations which may be learned or experiences around central themes or in accordance with a logical or pedagogic progression;
5. design, produce and test textbooks, printed material, audio-visual aids, teachers' guides and requisite teaching equipment;
6. develop techniques and forms of pupil evaluation and design, produce and test charts and documents for the evaluation of pupils in function of the educational objectives, intentions and goals;
7. design and apply a curriculum evaluation system, in particular a system of checking the relevance of the objectives to the intentions and the consistency of strategies, contents, teaching resources, and pupils' achievement of objectives;
8. develop a form of feedback geared to the results achieved by pupils, the observation of lessons, and any useful information on teaching progress;
9. design and apply a training curriculum for teachers, inspectors, school principals and those responsible for the training of teacher educators which coheres with the general educational intentions, objectives, contents, strategies and teaching resources of interdisciplinary education.

4.3. **Aspects of Relevance and Balance in a Future-Oriented Curriculum**

The curriculum developer should be aware of the severe pressure that is brought by various vested interests to make the curriculum a reflection of the past or a response to very short-term needs. More than twenty years ago, Suchodolski (in Rassekh and

Fig 1.



A ⟶ B means: A determines B

A ⇢ B means: the information obtained in A is used in B

* Choice of teaching methods and approaches, design (and application) of learning situations, the manner in which these strategies are applied by teachers

** Textbooks, teachers' guides, roneotyped documents, audio-visual materials, banks of objectives, evaluation charts, tests, banks of items, instructional software, teaching equipment

Source: d'Hainaut 1986: 63

Vaideanu 1987: 178) stated that "Education for the future expresses the conviction that the present reality is not the only reality and that, consequently, it is not the only criterion in education. The future reality is another ... The fact that the principle of education for the future means breaking out of the narrow horizons of the present is of great significance." At the same time, while maintaining a future-oriented outlook, it is important to note the need for maintaining and strengthening the valuable aspects of traditional societal and cultural values.

The following are some of the future-oriented characteristics which could serve as guidelines to curriculum developers (APEID 1982: 49):

a) An emphasis in the curriculum on process learning to promote greater long-term transferability of learning;
b) Establishment in the curricula of characteristics that are not encouraged by the traditional society outside school, e.g., achievement motivation can be stressed in curricula through assessment procedures like criterion reference testing, or social and cultural acceptance can be emphasized in countries where the tradition is more individualistic;
c) Obvious persistent topics of the future such as energy, race relations, population, can be included even though the detail may need to be changed as years proceed;
d) Long-range planning may indicate a shift in balance, e.g., towards more technologically oriented curricula;
e) Futuristic exercises may become a regular part of curriculum development process;
f) Curricula can be designed with a degree of openness. That is, open -
   i) to external influence, more in contact with the future than are most educators; and
   ii) to internal influence from students so that there are genuine attempts to meet their needs as they see the future. (Preparation for unemployment as well as for employment might be an interesting example in some countries).
g) As teachers become more experienced in curriculum development, they will be more able to make the curriculum relevant to community needs. Also the horizons of the children have to be widened to give more understanding of international cultures and the forces that impinge on their lives from outside. The curriculum of the future will have to maintain a balance between these two forces.
h) The curriculum of the future will have to prepare students for situations, life styles and problems which as yet are unseen. Students will therefore need to be encouraged to be creative and innovative in meeting new demands placed upon them.

Some imperatives for a future-oriented curriculum are highlighted by Rassekh and Vaideanu (1987: 178):

> And yet there are few countries which can provide examples of education for the future or of the promotion of exercises of a forward-looking nature in the curriculum. We may wonder what form should be taken - firstly at the level of goals and subsequently in the learning process - by pedagogic solutions to such imperatives as: (a) training young people to detect, identify and discourage all forms of extremism or fanaticism; (b) providing all adolescents with a basic culture in order to help them to select information, to reject the utilitarianism and commercialism of the mass media; (c) teaching young people the cultural and ethical significance of sport in order to prevent sporting contests becoming violent or politically slanted; (d) promoting the moral values essential for the progress of mandkind and, under the specific socio-political conditions at the close of the present century, waging the extremely difficult struggle against individual and collective egoism which is at the origin of so many ills, and training adolescents to be generous, sincere and honest.

A methodological framework for a syllabus relevant to some of the indicators listed above is given in Appendix 2.

Among the strategies adopted to meet the challenges of future-oriented curricula one encounters a kind of educational radicalism (Rassekh and Vaideanu 1987: 186):

> The proponents of this strategy contend that the authorities should abandon traditional content forthwith and develop a new curriculum. Edward Cornish (1978) for example, in his chapter 'The Coming Revolution in Education', considers that scholars have a remarkable capacity for ignoring the present as well as the future; backward-looking and incapable of analysing what is around and ahead of them, they exert a strong influence on teaching. Advocating 'futurism' as the 'secret weapon' of an educational revolution, the author proposes six objectives - objectives and not a list of disciplines to be taught - for a 'total curriculum':
>
> *Access to Information*: Reading; listening and seeing; direct experiment; libraries and reference books; computerized data-retrieval; data from newspapers, business, government agencies, etc.; asking experts; judging reliability; managing information overload.
>
> *Thinking Clearly*: Semantics, propaganda and common fallacies; values clarification; deductive logic; mathematics; analytical problem-solving; scientific method; probability and statistics; computer programming; general systems; creative problem-solving;

forecasting and prediction.

Communicating effectively: Speaking informally; public speaking; voice and body language; cultural barriers to communication; formal and informal writing; grammar, syntax, and style; drawing, sketching, still photography, film making, etc.; graphic design and layout; outlines, flow charts, charts, tables, and graphs; organization and editing; handwriting, typing, dictating.

Understanding Man's Environment: Astronomy, physics, and chemistry; geology and physical geography; biology, ecology, and ethology; genetics, evolution, and population dynamics; fundamentals of modern technology; applied mechanics, optics, and electronics.

Understanding Man and Society: Human evolution; human physiology; linguistics; cultural anthropology (including history and the humanities); psychology and social psychology; racism, ethnicity, and xenophobia; government and law; economics and economic philosophy; changing occupational patterns; education and employment; issues in human survival; prospects for mankind.

Personal Competence: Physical grace and coordination; survival training and self-defense; safety, hygiene, nutrition, and sex education; consumer education and personal finance; creative and performing arts; basic interpersonal skills; small group dynamics; management and administration; effective citizen participation; knowledge of best personal learning styles and strategies; mnemonics and other learning aids; biofeedback, meditation, mood control; self-knowledge and self-motivation.

The author goes on to note that 'futurism' enables teachers to make a genuine link between education and life. 'Futurizing' the curriculum implies orienting young people towards the future instead of the past.

4.4. **Evaluation**

Some problems related to evaluation of balanced curricula have been discussed earlier. It was pointed out that some of these problems, e.g., absence of or insufficient weighting given to the psycho-motor and affective domains, were not specific to interdisciplinary curricula, but that they became critical factors in interdisciplinary education beause it aims to be more integrated with respect to the three domains of education and to achieve a harmonious development of the personality. The following lines of action have been suggested to make evaluation in general, and particularly

evaluation in interdisciplinary education, clearer and more effective (d'Hainaut 1986: 75):

i) Express objectives clearly, in terms of activities, approaches, and hoped-for attitudes on the part of pupils in specific situations.

ii) Make a distinction between evaluation of:
   - the group;
   - pupils in their relationship with the group;
   - pupils independently of the group.

   These distinctions are parallel to those recommended in the formulation of objectives.

iii) Base evaluation on:
   - careful examination of the product of the pupil's (or the group's) activity in the light of explicit criteria and in accordance with a precise scale;
   - observation of his behaviour in different situations, and comparision of it with specifically expected behaviour;
   - the use of tests and questionnaires, but only insofar as the activities which they require correspond to teaching goals and objectives, or when the replies called for in these tests reveal values, attitudes, or the mastery of knowledge and know-how laid down in the objectives.

iv) Constitute a bank of evaluation situations and items in which each item comprises:
   - the description of the situation in which the pupil is placed, and what he is provided with (objects, data, instruments, documents, etc.);
   - the specification and description (if it is observable) of the way the pupil perceives and the criteria of quality of this approach, the limits of tolerance, and a precise scale of marking;
   - the specification of desirable attitudes and/or values underlying these attitudes, together with behaviour which reveals these attitudes and the integration of the values concerned;
   - a reference to the corresponding objective or objectives;
   - indications as to the difficulty of the item and, where applicable, its discriminatory property.

   These item banks can be initiated by an *ad hoc* team and subsequently added to by the work of teachers in the field. Each item must be tried out on pupils before being made available to teachers.

v) On the basis of the above item banks, the construction of charts for the evaluation of the know-how and behaviour patterns of pupils and of the group (see Appendix 1 for examples of these charts).

4.5. **Education of Teachers and Other Personnel**

One aspect which is often neglected in educational reforms is the training
educational personnel involved in the reforms such as teachers, teacher educato
school principals, supervisors, curriculum designers and evaluators. This aspect is
special importance in reforms connected with the introduction of a balanced a
integrated curriculum. This is a difficult and complex task, often in conflict wi
traditional concepts and practices in education. Therefore, teachers in particular a
other personnel involved in the implementation of such reforms should receive
adequate awareness of the concepts and training in the practices involved in the ne
curricula.

Both cognitive and socio-affective objectives should be included in the traini
programmes for teachers. The teacher education curriculum should also include all t
aims and objectives that are found to be essential for the general education of pupi
The methodologies adopted for teaching pupils and evaluating them should be suitab
modified and adapted for training of teachers, e.g., if teachers are expected to tea
social studies instead of history, geography and civics in schools, the teach
education curriculum also should reflect the content and methodology of teachi
social studies as an integrated subject and not history, geography and civics
separate subjects.

The pre-service and in-service education of teachers should aim at relating th
professional practices to the realities of life, the needs and aspirations of individua
and the social, economic and cultural needs of the community. They should be ma
more proficient in the methodology and strategies of teaching, observation a
evaluation in the socio-affective field. While pre-service education programmes ha
to be thoroughly revised, it is necessary to provide in-service programmes for tho
who are already in service and to expose them to the new concepts a
methodologies.

5. SUGGESTIONS FOR NATIONAL LEVEL ACTION AND REGIONAL AND INTERNATIONAL CO-OPERATION

The overall general recommendation made at the International Symposium on the Evolution of the Content of General Education Over the Next Two Decades, held in Paris in 1980, was that "an interdisciplinary approach to general education curricula should be adopted, and curricula should be based on the principles of world peace, brotherhood among peoples and individuals, and tolerance; they should cover the problems of the world's resources and their use, development and equitable distribution; and they should give pupils a knowledge of information and informatics" (Unesco 1981c: 17). On the basis of this global recommendation, specific suggestions for action at national, regional and international level have been adopted at various seminars, meetings, etc., for the benefit of teachers, national curriculum development specialists, teacher educators, and educational specialists in Member States. No attempt is being made here to give a comprensive list of all these recommendations; instead, a brief survey of the main principles and ideas underlying them will be given.

5.1. National Level

1. The highest authorities within national governments involved in determining the national educational policies should be made aware of the need for enhancing the balance and relevance of the general education curriculum. For this purpose, such policies should clearly express acceptance of and support for an interdisciplinary approach in general education.
2. The aims and objectives of general education at the national level should reflect and incorporate aspects of interdisciplinarity. The curriculum development framework for general education should be based on these aims and objectives, and the selection of content should conform to the principles of integration, balance and coherence. The teaching methodology should also be appropriate to

the above considerations.

3. The strategies to be adopted in curriculum re-examination and reform should include:
   a) conducting national studies on the balance and relevance of the general education curriculum
   b) undertaking and supporting general and action-oriented research on specific practical issues
   c) enriching the findings of the national studies from the results of similar research conducted in other countries
   d) disseminating the information on the reform plans not only among educational personnel but also among interested members of other relevant sectors, parents and the general public
4. Teaching-learning materials, such as textbooks, teachers' guides and resource materials should be developed on the basis of the aims, objectives and methodology of the general education curriculum, recognizing the principles of integration, balance and relevance.
5. Appropriate arrangements should be made to ensure that in-school programmes and out-of-school activities support and reinforce each other in order to achieve the aims and objectives of the general education curriculum.
6. The system of general education should develop appropriate innovative strategies, methods and techniques of evaluation to suit the aims and objectives of interdisciplinarity, placing due emphasis on the psycho-motor and affective domains, in addition to the cognitive domain.
7. Pre-service and in-service teacher training programmes should be designed to assist teachers to implement curricula while conforming to the principles of integration, balance and relevance.
8. Measures should also be taken to retrain and re-orient administrators, supervisors and other personnel responsible for the implementation of curricula, including specialists in curriculum development and evaluation; an awareness of the purpose of such reforms should be created among parents and the general public.
9. As part of the general education preparation of undergraduates, universities might be encouraged to give consideration to the development of integrative or interdisciplinary, as distinct from discipline-based, survey courses as well as the treatment of selected topics/problems from disciplines in an integrative or

interdisciplinary way.

10. In view of the considerable influence exerted by higher education institutions, particularly universities, on the school curriculum and examinations, curricular reforms should be developed with the co-operation and participation of the higher education authorities.
11. The teams responsible for the elaboration of reforms in general education should be interdisciplinary in nature, including specialists from sectors outside education.
12. Reform programmes should be guided by appropriate research, including on-going programmes of monitoring and evaluation.

5.2. **Regional and International Co-operation**

International agencies such as Unesco, UNICEF, the world Bank and UNDP, along with several non-governmental agencies, are involved in assisting programmes in general education at the international level. Regional networks such as APEID, CARNEID, EIPDAS and NEIDA are conducting similar programmes at the regional level. The following recommendations have been mainly directed to these organizations.

1. Unesco and the regional networks should provide assistance in: the research efforts of Member States; dissemination of findings; organization of international and regional seminars, workshops and studies; programmes of exchange of information, personnel and resource materials among Member States.
2. Unesco should promote case studies on experiences and innovations concerned with integration, balance and relevance of the general education curriculum.
3. Unesco should assist in developing a source book related to this field with particular emphasis on approaches, methodologies and assessment procedures.
4. Joint studies and collaborative research related to problems and issues in this field should be undertaken at the regional level, the findings of which should be subsequently synthesized for regional dissemination and use.
5. Consideration should be given to the performance by Unesco Headquarters of a clearing house function to make relevant materials available to the Member States implementing programmes for enhancing integration, balance and relevance

in the general education curriculum.

6. Unesco should provide a forum to consider assessment and evaluation strategies for the new curricula envisaged; take further action to produce a comprehensive handbook on assessment; and maintain a small evaluation team to monitor and suggest diagnostic procedures.

6. CONCLUSIONS

Some of the main conclusions that emerge in the course of the analysis of the material reviewed for this study are as follows:

1. Curriculum reform has to be a continuous process in order to meet the demands of individuals and society brought about by rapid changes taking place in the modern world and having a great impact on man and his environment.
2. Future-oriented thinking should be recognized as a working principle in identifying the content of education which seems likely to correspond to foreseeable needs in the years to come.
3. While maintaining a future-oriented outlook, it is important to note the need for maintaining and strengthening those aspects of traditional, societal and cultural values which are worth preserving.
4. The most significant aspects of this reform process are concerned with the relevance, balance and integration of the content of general education.
5. Balance in the curriculum should be seen in terms of the converging influence of the various components of the educational process on the development of the personality of the learner through cognitive, affective, psycho-motor, ethical, aesthetic and physical effects and not merely in terms of disciplines and quantitative balance of subjects.
6. Integration and interdisciplinarity become relevant and necessary in the general education curriculum to provide the learner with a way of dealing with the knowledge explosion and of selecting and organizing this knowledge into meaningful patterns and generalizations.
7. The concept of lifelong education adds a further dimension to general education at school level by the integration of school with the community and community development, and of school activities with those of the community.
8. Out-of-school and non-formal education are sectors which lend themselves more easily to the effective implementation of a balanced and integrated curriculum than the formal school with its rigid structure and traditions. However, it should be recognized that instead of maintaining a sharp boundary between the formal

and non-formal sector, there should be a horizontal integration of the two, aiming at harmonizing the various educational agencies and settings such as the home, school, workplace, community and mass media.

9. The core curriculum should not be treated simply in terms of subject content. It is necessary to consider appropriate learning experiences, situations and matters concerning skills, attitudes, values and reasoning processes.
10. Evaluation of pupil learning appears to be the weakest component in the implementation of a balanced curriculum. More serious attempts have to be made to cover the objectives of the affective and psycho-motor domains and other wider and complex objectives deemed essential for a balanced curriculum.
11. Several problems arise in the determination of criteria for relevance in general education. In a world dominated by such factors as class structures, elitism and the generation gap, is it valid for the elite or adults to decide what is worthwhile and relevant for the future generation and for the masses? Also, attempts to make education relevant by conceiving schooling as an instrument for the implementation of designated social values, taken as ultimate, may be a source of danger to the ideal of a free and rational society.
12. The success of a curriculum renewal programme depends to a great extent on the re-orientation of teachers and other educational personnel to receive an adequate awareness of the new concepts and approach and the knowledge and skills to cope with the practices involved in the implementation process.
13. It is necessary to create an awareness among parents and the general public of the rationale underlying the reforms aimed at developing a balanced curriculum.
14. Integration, balance and relevance of the general education curriculum should not be the exclusive concern of those responsible for general education at the school level. Educational institutions at all levels, particularly universities, exert considerable influence on the school curriculum and examinations; hence they should be actively and directly involved in all stages of the curriculum renewal process. Higher education institutions may be required to revise and modify their own courses and admission requirements to accommodate the progressive measures adopted in the school curriculum.
15. Considerable attention should be paid to the re-orientation of teaching-learning materials such as textbooks, teachers' guides and resource materials to meet the requirements of the new curricula.

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Appendix 1: Evaluation Charts
Source: d'Hainaut 1986: 76-78

Evaluation chart of pupils' (or groups') products

	Product expected	Criteria of quality of expected product and limits of tolerance	Value of expected product in relation to criterion* 1 2 3 n**
X	Product 1	Criterion 1.1 Criterion 1.2	
Y	Product 2	Criterion 2.1 Criterion 2.2 Criterion 2.3	
Z	Product 3	Criterion 3.1	

Evaluation chart of pupils' (or groups') behaviour or approaches

	Expected behaviour	Criteria of quality of expected behaviour and limits of tolerance	Value of expected behaviour in relation to criterion* 1 2 3 n**
X	Behaviour 1	Criterion 1.1 Criterion 1.2 Criterion 1.3	
Y	Behaviour 2	Criterion 2.1 Criterion 2.2	

* Mark or assessment on a 5-level scale (A,B,C,D,E, or ++, +, 0, -, --) or a 3-level scale (+ present or satisfactory, 0 doubtful or just adequate, - absent or inadequate)

** Numbers or letters identifying pupils

	Expected product or behaviour	Criterion of quality of expected behaviour (and limits of tolerance or underlying value)	Value of behaviour observed in relation to the criterion* (or value)** 1 2 n***
1	Cognitive or psycho-motor behaviour	Criterion C 1.1.	
		Criterion C 1.2	
	Product 1	Criterion F 1.1	
		Criterion F 1.2	
		Criterion F 1.3	
	Socio-affective behaviour 1	Value(s) V 1.1	
		under- V lying 1.2	
2	Cognitive or psycho-motor behaviour		

* Mark or assessment on a 5-level scale (A,B,C,D,E, or ++, +, 0, -, --) or a 3-level scale (+ present or satisfactory, 0 doubtful or just adequate, - inadequate or absent)

** Assessment on a 3-level scale: + presence of behaviour revealing the value shown in previous column; 0 absence of this behaviour; - presence of opposite behaviour or incompatible behaviour (revealing the opposite value)

*** Numbers or letters identifying pupils

Chart of continuous socio-affective observation (one per pupil)

Values	Indicative or revelatory behaviour	Manifestation of indicative behaviour (+) or opposite behaviour (-) or absence of expected behaviour (0)
V 1	C 1.1	+ + 0 + 0 + ...
	C 1.2	+ - + 0 0 + ...
		+ + 0 0 0 + - + ...
V 2	C 2.1	.....
	C 2.2	.....

Appendix 2: Methodological Framework for the Content of General Education
Source: Rassekh and Vaideanu 1987:227-233.

The methodological framework presented here is intended not as a model or as an ideal to be achieved over the coming decades but rather as a platform or reminder for political authorities, curriculum designers and educators. This framework is meant to be comprehensive in relation to the sources of contents and the aspirations of young people and relevant with regard to the indicators listed above. Being aimed at an all-round, integrated education, it links education of the mind and of the body, computer science and sport, patriotic education and receptiveness to world problems. It also indicates some essential educational goals and linkages to be achieved between formal, non-formal and informal education. For a given type of content (education for peace, nutritional education, sex education, etc.) several points of entry are suggested with the aim of providing curriculum designers with a choice in accordance with specific educational situations.

NOTES TO METHODOLOGICAL FRAMEWORK

1. Understanding (education for) and training (education through); subjects are at one and the same time the aims and the means of education.

$$\text{Learner} \overset{\text{for}}{\underset{\text{through}}{=\!=\!=}} \text{aims + means}$$

Education for = understanding the methodologies and principles of science, values, the languages of art, etc. and assimilating know-how.
Education through = being educated to act and participate with the help of the educational resources of the various subjects. Education in these two senses does not take place in clearly separable phases.

2. *Non-formal activities* organized by the school or youth organizations may or may not be included in school timetables; they are often elective or optional and they are also often multi- or interdisciplinary. In Europe, 'olympiads' in the various subjects--mathematics, physics, chemistry, etc.--are starting to play an important role. The international phase is preceded by phases at the national level (towns, departments, etc.) involving thousands of pupils. In Romania, national competions are organized in all subjects (literature, geography, music, etc.) and all occupations.

3. Under this heading, we offer some comments on the goals or major concerns without attempting to give an overall view of the general aims of education.

4. *Infusional approach* = expression used in Unesco's programmes to designate the promotion of the contents of a new type of education in curricula or the process of learning the various subjects; applies in particular to education for peace, environmental education, etc., i.e. interdisciplinary objectives and contents.

5. Every learning process should be geared to lifelong education, that is to say, should prepare pupils for creative and continuous learning and for realistic self-evaluation.

6. Education for and through technology and work helps to provide pupils with educational and career guidance without imposing unduly early specialization; productive (socially useful) work should be regarded as a means of training and not as a purely economic activity.

7. Possible options in relation to specific social and educational situations.

8. We have tried to avoid making the list of subjects too long; however, to avoid edging out or eliminating some subjects, we have opted to include ten groups of subjects in school timetables; the subjects could no doubt be grouped in a different way, but the important thing is that they should be included as contents of learning.

Methodological framework for the contents of general education

Subject groupings and/or subjects—formal and non-formal education[1]	Importance of informal education[2]	Goals; remarks[3]	Observations; possible options
I. *Education for and through the natural sciences*[4] Mathematics Computer science and/or CAL Physics Chemistry Biology Knowledge of the earth and space: geography, geology, astronomy, etc. Non-formal activities and national and international competitions to identify and encourage talent[4]	Important: to link up formal and informal education (see sub-chapter VI.2: forms of linkage)	1. Providing a basic training in the sciences: basic concepts, theories, methodologies and outlooks, mathematical tools to be used 2. Training young people in the use of computers 3. Enabling young people to utilize sources of information available in society 4. Preparing pupils for continuous and creative self-instruction[5]	1. Different modes and degrees of subject integration 2. Infusional approach:[4] education relating to the quality of life and environment, the problems of development and underdevelopment
II. *Social and human sciences* National, regional and world history National and world literature Philosophy and philosophy of life Understanding of man, of society and the future	Important: apply procedures at school for linking formal and informal education	1. Humanist education 2. Fostering a critical spirit 3. Conclusions on the development of societies, on social inequalities and injustice 4. Knowledge of different societies and acceptance of their diversity 5. Improvement in the quality of school life and the life of the community	1. Infusional approach: education for democracy and participation 2. Introduction of future-oriented exercises or courses 3. Emphasis on the role of the family 4. Possibility of introducing contents pertaining to education for peace, education relating to the environment and the quality of life
III. *Education for and through technology and work* In relation to the needs, resources and prospects of each national community. In keeping with the computerization of all sectors of social life. School and/or out-of-school activities		1. A proper attitude to work; respect for work 2. A technological culture: a critical interest in and attitude to technological progress 3. Training of active individuals and inculcation of know-how 4. Preparing pupils to adapt easily to changes in the world of work	1. Open to boys and girls; options 2. Conceived as a component of general culture[6] 3. In keeping with the dynamics of the world of work
IV. *Mother tongue and foreign languages* Important role of the media and cultural exchanges		1. Sense of belonging to a given culture; national dignity 2. Means of communication and knowledge of other cultures; open-mindedness 3. Critical analysis of the quality of the messages carried by the media	1. Systematic teaching and preparation for continuous self-instruction 2. Possibility of fitting in education for peace and co-operation
V. *Moral and civic education* Courses and exercises or debates (cf. the experience of Asian countries), or indirect moral education involving the participation of all teachers	Religious education. Greater consultation and/or involvement of the family	1. Cultivating an interest in the ethical quality of life and in social equality and justice 2. Inculcating moral values likely to further co-operation and participation 3. Defusing aggressiveness, self-interest, racism, etc.	1. Can include education for democracy and participation and sex education[7] 2. Non-verbal teaching inputs to be taken into account

Subject groupings and/or subjects—formal and non-formal education[1]	Importance of informal education[2]	Goals; remarks[3]	Observations; possible options
VI. *Spiritual and cultural education* Helping young people to steer a course in the world of material and spiritual values and to combat dehumanization. Improving the quality of relations: pupil–pupil, teacher–pupil, etc.	Important role of the family and youth organizations Importance of traditions and of the cultural training capacity of the local community	1. Distinction between ends and means 2. Respect for values and talent 3. Giving cultural values priority in life 4. Combating the possible moral disintegration of society	1. Ensuring balance between the cognitive and affective 2. Educating young people to make rational decisions and choices 3. Possibility of fitting in education for development and international co-operation
VII. *Education for and through the arts and manifestations of beauty* Special emphasis on music and the visual arts Multiple and combinable options Importance to be given to artistic events	Very important: hence the need to guide pupils and utilize in the school the aesthetic experience acquired out of school Role of the family	1. Development of aesthetic taste and acquisition of criteria of judgement 2. Preparing pupils to participate in the artistic life of society 3. Organizing creative artistic exercises 4. Identifying and encouraging talent	1. Possibility of linking different arts or integrating education in the different arts through common aesthetic concepts; means of expression, styles, etc. 2. Possibility of fitting in education for peace and co-operation
VIII. *Education for and through sport and leisure* Non-formal activities organized by the school (clubs, competitions, excursions, nature classes, etc.) should have an important place	Linkage between formal and informal education is important	1. Knowledge and know-how with regard to sports and leisure pursuits 2. Developing a sporting outlook 3. Cultivating interest in the various competitions seen as sporting and ethical events 4. Fostering enjoyment of life	1. Possibilities for incorporating new types of education
IX. *Modern domestic science* The home (furnishing, *ikebana*, etc.) Family life Nutritional education Family budget Formal and/or non-formal activities	It is essential to involve parents	1. Preparing pupils for marriage and family life 2. Indirect preparation for future parenthood 3. Indirect preparation for working life: knowing how to organize one's own life	cf. the experience of Japan, the Netherlands, the Federal Republic of Germany, etc. Possibility of introducing population education
X. *The new forms of education and contemporary world problems*[4] Environmental education. Education for democracy and participation Education for a new international order Education for peace and co-operation Population education, etc.	Informal education is very important here, and not always in accordance with the aims pursued in school	1. Goals coinciding with those of sections I, II, IV, V, VI and IX. 2. Giving pupils a relevant view of world problems 3. Devising exercises as an approach to specific problems of a global and multi-disciplinary nature 4. Improving the quality of school life and relationships 5. Highlighting interdependencies and the responsibilities of each individual 6. Cultivating the idea of the solidarity of modern man	1. Infusional approach or separate subjects: depending on needs and traditions, the characteristics of the initial and in-service teacher training subsystem, etc. 2. In the case of an infusional approach, one subject should have a co-ordinating role